ALGEBRA – MODEL No 1

[Q1] Choose the correct answer:

(1) If $x^2 - y^2 = 24$, $x + y = 8$, then $x - y =$ .....

a) 3 b) 4 c) 18 d) 30

(2) If $(x - y)^0 = 1$,then $x \in$.........

a) $R - \{5\}$ b) $R - \{-5\}$ c) $\{5\}$ d) R

(3) The solution set of : $x^2 = 4x$ is .... where $x \in Q$

a) $\{4\}$ b) $\{0\}$ c) $\{0, 4\}$ d) ϕ

(4) The probability of sure event = ...

a) 0 b) 1 c) −1 d) $\frac{1}{2}$

(5) If $x^3 - a = (x - 4)(x^2 + 4x + 16)$, then a = ...

a) 4 b) 8 c) 16 d) 64

(6) $4^3 + 4^3 + 4^3 + 4^3 =$ ....

a) 4^3 b) 4^4 c) 4^{12} d) 4^{81}

[Q2] Complete each of the following:

1) If : $x^2 + 10x + k$ is perfect square then k = ...

2) If $x^3 y^{-3} = 8$, then $\frac{x}{y} =$ ....

3) If $2^y \times 5^y = 100$, then y = ...

4) If : $a - b = 7$, $a^2 + ab + b^2 = 9$, then $3a^3 - 3b^3 =$ ....

5) If $2^x = 3$, then $8^x =$ ....

[Q3] factorize completely each of the following :

① $5x^2 - 25$ ② $x^2 - 3x - 28$

③ $8 - x^3$ ④ $4x^2 - 12x + 9$

[Q4]

A) Find the perimeter of rectangle its area is $40cm^2$ and its length is 3cm. more than its width?

B) find the value of x in each equation of the following :

$2^{x-5} = 3^{2x-10}$ $(x+1)^5 = 32$

[Q5]

A) find in the simplest form : $\frac{4^{x+1} \times 9^{2-x}}{6^{2x}}$, then find the value of the result when x = 1

B) A box contains 30 cards numbered from 1 to 30 . a card is drawn randomly. Calculate the probability of drawing card carrying :

① an odd

② A number divisible by 5

③ A number is perfect square



End of the questions

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Algebra – Model No 2

[Q1] Choose the correct answer:

(1) If $x-y=2$, $x+y=7$, then $x^2-y^2=$ ....

a) 9 b) 14 c) 28 d) 98

(2) If : $9x^2-k\ x+4$ is perfect square then $k=$ ....

a) 6 b) 12 c) 36 d) 72

(3) If $6^x=11$, then $6^{x+1}=$ ....

a) 12 b) 22 c) 66 d) 72

(4) The solution set of : $x^2+1=0$ in R is ....

a) {1} b) {−1} c) {1, −1} d) ϕ

(5) If $(2x+1)$ is factor of $2x^2+3x+1$,then the other factor is ...

a) $2x-1$ b) $X-1$ c) $X+1$ d) $X+2$

(6) Sixth of the number $(2^{12}\times 3^{12})=$ ....

a) 6^2 b) 6^4 c) 6^{11} d) 6^{23}

[Q2] Complete each of the following:

1) If tossing a fair die once ,and observing the number on upper face , then the probability of getting a prime number = ...

2) If $x^4y^{-4}=16$, then $\frac{x}{y}=$ ....

3) If $2^x=15$, $2^y=15$then $2^{x-y}=$ ....

4) If : x+ y = 8 , $x^3+y^3=24$,then $x^2-xy+y^2=\cdots$

5) If the probability that a pupil succeed is 0.4 then the probability of his failure = ...

[Q3] factorize completely each of the following :

① $xy - 5y + 6x - 30$ ② $x^2 + 7x + 6$

③ $x^3 - 125$ ④ $9x^2 - 16$

[Q4]

A) A positive integer , its square is more than its 3 times by 40 , find the number ?

B) If $x + x^{-1} = \sqrt{5}$, then find the value of : $x^2 + x^{-2}$ $x^3 + x^{-3}$

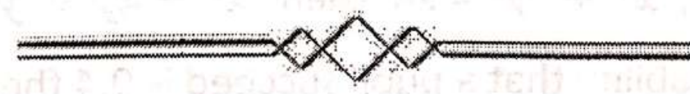
[Q5]

A) If $\frac{8^x \times 9^x}{18^x} = 64$, then find the value of 4^{-x}

B) In a football league, the probability of a team to win is 0.7 and the probability of a draw is 0.2 .if the number of matches supposed to be played by that team is 30 matches .

How many matches do you predict the team wins ?

How many matches do you predict the team loses ?



End of the questions

ALGEBRA – MODEL NO 3

[Q1] *Choose the correct answer:*

(1) $3^x + 3^x + 3^x = ...$

a) 3^{2x} b) 3^{x+1} c) 3^x d) 9^{x+1}

(2) If : $x^2 + k\ x + 36$ is perfect square then $k = ...$

a) ± 6 b) ± 8 c) ± 12 d) ± 18

(3) If : $x^2 + 14\ x + k$ can be factorize , then $k = ...$

a) 2 b) 7 c) 14 d) 49

(4) If $2^x = 3$, $3^y = 2$, then $x\ y = ...$

a) 1 b) 2 c) 3 d) 6

(5) The solution set of : $x^2 = 9^0$ in R is ....

a) $\{-3 , 3\}$ b) $\{1\}$ c) $\{-1\}$ d) $\{1 , -1\}$

(6) If a–b = 3 , x–y = 5 , then a (x–y) + b (x–y) = ...

a) 8 b) 15 c) –8 d) –15

[Q2] Complete each of the following:

1) If chosen a digit from a number 37542 ,then the probability of getting an even number = ...

2) If $2^{x-5} = (\sqrt{5} - \sqrt{3})(\sqrt{5} + \sqrt{3})$, then $x^2 = ...$

3) A quarter of the number $(\sqrt{2})^{12} = \cdots$

4) If : x + y = 3 , $x^2 - y^2 = 12$, then x – y = ...

5) The probability of the impossible event = ...

[Q3] factorize completely each of the following :

A) $8x^3 + 27$ $2x^2 - 18$

B) $x^2 + 7x + 12$ $ab - 3b + 5a - 15$

[Q4]

A) A positive integer , if we add its square to its 3 times the result will be 18 , what is the number ?

B) Use factorization to get the value of each of the following easily:

$(0.6)^2 - 1.2 \times 10.6 + (10.6)^2$ 98×102

[Q5]

A) prove that : $\frac{27^{x-1} \times 8^x}{(2\sqrt{2})^{2x} \times (3\sqrt{3})^{2x}} = \frac{1}{27}$

B) A class has 40 students, 30 students of them succeed in math , 24 students of them succeed in science , if one of them is chosen randomly from this class , find the probability that the student :

succeed in math failure in science



End of the questions

ALGEBRA – MODEL No 4

[Q1] Choose the correct answer:

(1) $3x^0$ = ..., where $x \neq 0$

a) 0 b) 1 c) 3 d) 3x

(2) If $x^2 - 5xy + 6y^2 = 10$, $x - 2y = 5$, then $x - 3y =$..

a) 2 b) 7 c) 14 d) 49

(3) $2^{20} + 2^{21} =$ ....

a) 2×2^{40} b) 2×2^{41} c) 3×2^{20} d) 3×2^{21}

(4) If : $kx^2 + 6x - 27$ can be factorize , then k = ...

a) 6 b) 3 c) 9 d) 5

(5) If x = 5 is solution of $x^2 - 6x + n$, then n= ....

a) 5 b) –5 c) 4 d) –4

(6) $(5^{x+2} - 5^{x+1}) \div 5^x$ = ...

a) 5 b) 10 c) 15 d) 20

[Q2] Complete each of the following:

1) If $k^2 + m^2 = 21$, $mk = 3$, then $(k + m)^2$=.........

2) If (x + 1) is factor of $5x^2 - 2x - 7$,then the other factor is ......

3) If $3^x + 3^x + 3^x = 1$, then x = ...

4) If : $kx^2 + 20x + 25$ is perfect square , then k = ...

5) If x + y = 5 , a + b = 3 then ax +xb + ay +yb =......

[Q3] factorize completely each of the following :

A) $x^3 - 8$ $\qquad$ $9x^4 - 36y^4$

B) $2x^2 + 10\,xy + 2y^2$ $\qquad$ $x^2 - y^2 + 5\,x + 5\,y$

[Q4]

A) Two real numbers, the difference between them is 2 and the sum of their squares is 74 . Find the two numbers ?

B) Use factorization to get the value of each of the following easily: $2 \times (26.18)^2 - 2 \times (23.82)^2$

[Q5]

A) If $3^{x+1} = 81$, $4^{x+y} = 1$, then find the value of x and y ?

B) A numbered cards is selected randomly from a set of similar cards numbered from 1 to 24 , Find the probability of getting a card that carries : A multiple of 6 A number is perfect square



End of the questions

Algebra – Model No 5

[Q1] Choose the correct answer:

(1) If $x^2 - m = (x-7)(x+7)$, then m = ...

a) 7 b) −7 c) 49 d) −49

(2) 1) If : $x^3 + y^3 = 15$, $x + y = 3$, then $x^2 - xy + y^2 = \dots$

a) 3 b) 5 c) 15 d) 45

(3) If x = 2 is solution of $x^2 - 6x + k$, then k = ...

a) 8 b) −8 c) 4 d) −4

(4) If $2^x = 3$, $3^y = 16$, then x y = ...

a) 2 b) 4 c) −2 d) −4

(5) If : $x^2 + 7x + n$ can be factorize, then n = ...

a) 8 b) 10 c) 18 d) 49

(6) If : $0.05 \times 0.02 = 10^x$ then x = ...

a) −4 b) 0 c) 2 d) 4

[Q2] Complete each of the following:

1) If $x^2 + ax + 25$ is perfect square, then a = ...

2) The S.S : $x(x-3) = 5x$ in R is ....

3) If $2x^2 - 3x - 35 = (2x + m)(x - 5)$, then m = ...

4) $(x-3)^0 = 1$ where $x \neq$ .....

5) If $(\frac{1}{2})^x = 5$ then $8^{-x} =$ ....

[Q3] Factorize completely each of the following :

① $25x^2 - 49$

② $2x^3 + 250$

③ $x^2 - 8x + 12$

④ a b + 4 b + 5 a + 20

[Q4]

A) Find the length and width of rectangle its area is $40 cm^2$ and its length is 3cm. more than its width?

B) find the value of x in each equation of the following :

① $(\sqrt{3})^{x-1} = 9$ ② $5^{x-1} \times 7^{1-x} = 1$

[Q5]

A) If $\frac{49^x \times 25^{2x} \times 3^{4x}}{(\sqrt{49})^{-x} \times (15)^{4x}} = 343$, then find the value of : 6^{2x}

B) in the experiment of composing 2–digit different number from the digits { 1 , 2 , 3 , 4 } .find the sample space then Find the probability of getting :

① a number its tens is even

② a number both units and tens are even



End of the questions

ALGEBRA – MODEL NO 6

[Q1] Choose the correct answer:

(1) If $x^2 + 10x + k$ is perfect square , then k = ...

a) 100 b) 25 c) 20 d) 10

(2) The solution set of : $3x^2 = 3x$ in R is ....

a) {3 , −1} b) {−3 , 1} c) {0 , 1} d) {1 , 3}

(3) If $3^x = 5$, $3^y = 7$, then 3^{x+y} = = ...

a) 12 b) 15 c) 21 d) 35

(4) If : $x^2 + ax - 12$ can be factorize , then a = ...

a) 7 b) 8 c) 4 d) 13

(5) Which of the following is true ($x \in R$)

a) $9^x > 0$ b) $x + 9 > 0$ c) $x^9 > 0$ d) $9x > 0$

(6) If the age of a man now is x year , then his age after 5 years is ....

a) X + 5 b) X − 5 c) 5 x d) x

[Q2] Complete each of the following:

1) If : $k^2 + m^2 = 21$, k m = 3 ,then k + m = ...

2) If (x + 1) is factor of $5x^2 - 2x - 7$,then the other factor is ......

3) If Sixth of the number ($2^{12} \times 3^{12}$) = 6^k , then k = ...

4) The S.S : $x^3 + 25x = 0$ in R is ....

5) If $3^x + 3^x + 3^x = 1$, then x = ...

[Q3] factorize completely each of the following :

A) ① $x^6 - 7x^3 - 8$ ② $16x^2 - a^2 + 6ax - 9x^2$

B) Use factorization to get the value of each of the following easily:

① $(14.06)^2 - 8.12 \times 14.06 + (4.06)^2$ ② $(998)^2 - 4$

[Q4]

A) Find real number that its twice exceed to its multiplicative inverse by 1 ?

B) find the value of x in each of the following :

① $3^{x-1} = 27$ ② $3^{x-3} = 2^{2x-6}$

[Q5] A) If $\frac{8^x \times 3^{2x}}{18^x} = 64$, then find the value of 4^{-x}

B) A box contains 40 cards numbered from 1 to 40 . a card is drawn randomly. Calculate the probability of drawing card carrying :

① An even number
② A number divisible by 5
③ A number is perfect square
④ A prim number less than 18



End of the questions

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Algebra – Model No 7

[Q1] Choose the correct answer:

(1) If : $x^2 - k\ x + 25$ is perfect square then k = ...

a) 5 b) 25 c) ± 10 d) ± 5

(2) $4^3 + 4^3 + 4^3 + 4^3 =$ ....

a) 4^4 b) $(16)^3$ c) 4^{12} d) 4^{81}

(3) If $x = \frac{\sqrt{9}}{\sqrt{3}}$, then $x^{-1} =$.........

a) $\sqrt{3}$ b) 2 c) $\frac{\sqrt{3}}{\sqrt{2}}$ d) $\frac{\sqrt{3}}{3}$

(4) If : k − m = 9 , k + m = 15 then $k^2 - m^2 =$.......

a) 135 b) 9 c) 150 d) $\frac{3}{5}$

(5) $2^0 + 2^{-1} - \left(\frac{-1}{\sqrt{2}}\right)^2 =$ ....

a) 2 b) 0 c) 1 d) −1

(6) Quarter of $(\sqrt{2})^{12} =$ ....

a) $(\sqrt{2})^3$ b) 2^3 c) 2^4 d) 12

[Q2] Complete each of the following:

1) $x^2(x+1)(x-1) = (\ldots\ldots - \cdots\ldots)(x+1)$

2) $x^2 - 5x + 6 = (\ldots\ldots - 3)(x - \ldots\ldots)$

3) The probability of an impossible event = ...

4) $x^3 + 8 = (\ldots.+2)(x^2\ \ldots\ldots + 4)$

5) $\sqrt{2} \times (\sqrt{2})^2 \times (\sqrt{2})^3 =$ .... in the simplest form

[Q3]

A) In a football league, the probability of a team to win is 0.6and the probability of a draw is 0.3 .if the number of matches supposed to be played by that team is 30 matches .
How many matches do you predict the team loses?

B) The solution set of : $2x^2 - 5x = 3$ in R is ....

[Q4]

A) Find in the simplest form : $\frac{2^{2n+1} \times 5^{2n+1}}{10^{2n}}$

B) If : $(9)^{x+3} = 3^{x+5}$, then find the value of x ?

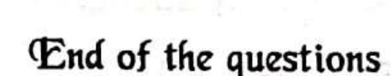
[Q5] Factorize completely each of the following:

① $5x^2 - 3x - 2$

③ $a^2 - b^2c^4$

② $64x^4 + n^4$

④ $x^2 - 2xy + y^2 - z^2$



End of the questions

ALGEBRA – MODEL No 8

[Q1] Choose the correct answer:

(1) If : $a^2 - b^2 = 16$, $b - a = 2$,then $a + b =$ ....

a) 4 b) −8 c) 8 d) 2

(2) If : $\sqrt{x+5} = 3$ then $\sqrt{x} =$ ....

a) 0 b) 2 c) 4 d) 9

(3) The S S of : $x^2 + 4 = 0$ in R is ....

a) $\{-4\}$ b) $\{-2, 2\}$ c) $\{-4, 4\}$ d) ϕ

(4) Sixth of the number ($2^{12} \times 3^{12}$)= ....

a) 6^2 b) 6^{11} c) 6^4 d) 6^{23}

(5) If : $4x^2 + 12x + a$ is perfect square then a = ...

a) 6 b) 16 c) 1 d) 9

(6) If : $4^5 = 5$, then 4^{x-1}= ....

a) 1.25 b) 0.125 c) 0.8 d) 0.08

[Q2] Complete each of the following:

1) If : $5^{x+3} = 7^{x+5}$, then x = ...

2) $(5x - 2y) = (25x^2 + 10xy + y^2)$ =..........

3) If : x= $(\sqrt{2} + 3)^5$, y= $(\sqrt{2} - 3)^5$, then x y = ...

4) In a mixed school there are 300 pupils , the probability of selecting perfect student is a boy 0.6 , then the number of girls is ....

5) If : $a^2 + 2ab + b^2 = 25$, then $a + b =$ ....

[Q3] factorize completely each of the following :

A) $4a^4 - 9a^2 + 6a - 1$ ② $49x^2 - 25$

B) What is the real number which its double exceeds its multiplicative inverse by 1 ?

[Q4]

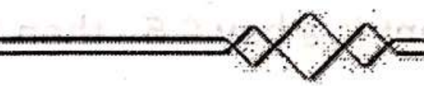
A) find the solution set in R : $(x-4)^5 = 32$

B) If : $\left(\frac{3}{5}\right)^{x+2} = \frac{125}{27}$ then find the value of x ?

[Q5]

A) If : $3^x = 27$, $4^{x+y} = 1$, *then fin the value of x and y*

B) A box contains 7 black balls , 8 red balls and 5 white balls.If we draw one ball randomly, find the probability of getting : red ball blue ball black or white ball



End of the questions

ALGEBRA – MODEL NO 9

[Q1] Choose the correct answer:

(1) The S.S. in R : $x^2 + 9 = 0$ is ....

a) {−3} b) {3} c) {−3 , 3} d) ϕ

(2) If : a − b = 9 , a + b = 15 , then $a^2 - b^2$ = ...

a) 81 b) 135 c) 144 d) 225

(3) If : $x^2 + 14x + b$ is perfect square then b = ...

a) 2 b) 7 c) 14 d) 49

(4) $\frac{4 \times 2^{-1}}{3^{-1}}$ = ...

a) 6 b) $\frac{1}{3}$ c) $\frac{1}{2}$ d) $\frac{1}{6}$

(5) If : 4 times a number is 48 , then third of this number is ....

a) 16 b) 12 c) 4 d) 8

(6) If : x is an odd number , then the next odd number is .....

a) X + 1 b) X + 2 c) X + 3 d) X + 4

[Q2] Complete each of the following:

1) If : $6^x = 7$, then 6^{x-2} = ...

2) The solution set in R : $x^2 = 5x$ is ....

3) Quarter of the number $2^{50} = 2^{\cdots\cdots}$

4) If : (x + 5) is one factor of : $x^3 + 125$ then the other factor is ...

5) 1 L = ... cm^3 .

[Q3]

A) Simplify : $\frac{4^{x+1} \times 9^{x-2}}{6^{2x}}$

B) Find the positive real number , if we add its twice to its square the result will be 35 ?

[Q4]

A) Factorize : $8y^3 + 1$ $\qquad$ $x^2 - 10xy + 25y^2 - 36$

B) If : $8^{4x-1} = 32$, then find the value of x ?

[Q5]

A) Factorize : $4x^4 + 1$ $\qquad$ $3x^2 + 7x + 2$

B) In a football league, the probability of a team to win is 0.6 and the probability of a draw is 0.3 .If the number of matches supposed to be played by that team is 30 matches .

How many matches do you predict the team draw ?

How many matches do you predict the team loss ?



End of the questions

Algebra – Model No (10)

[Q1] Choose the correct answer:

(1) If : $x^3 + 27 = (x + 3)(x^2 + k + 9)$, then $k =$ ....

a) $-6x$ b) $-3x$ c) $3x$ d) $6x$

(2) If : $x^2 + y^2 = 7$, $xy = 3$, $(x - y)^2 =$ ....

a) -1 b) 1 c) ± 1 d) 10

(3) If : $x^3 y^{-3} = 8$, then $\frac{y}{x} =$ ....

a) $\frac{1}{512}$ b) $\frac{1}{8}$ c) $\frac{1}{2}$ d) 2

(4) If : $3^x = 5$, then $27^x =$ ....

a) 9 b) 25 c) 125 d) 729

(5) If : $(x - 1)$ is one factor of : $x^2 - 4x + 3$ then the other factor is ...

a) $X + 3$ b) $X - 3$ c) $X + 1$ d) $X - 4$

(6) If : $x^2 + 4x + a$ is perfect square then a = ...

a) 3 b) 4 c) 8 d) 16

[Q2] Complete each of the following:

1) If : $x + y = 7$, $x^2 - y^2 = 35$, $y - x =$ ....

2) The probability of an impossible event = ...

3) If : $2^x = 5$, $2^{-y} = 3$, $2^{x+y} =$ ....

4) complete in the same pattern: 1 , 4 , 9 , 16 , 25 , ...

5) If : $(25)^2 - (15)^2 = 10x$, then $x =$ ...

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[Q3]

A) prove that : $\frac{(\sqrt{2})^2 \times 2^{1-x} \times 12^{2x-1}}{8^x \times 9^x} = \frac{1}{3}$

B) Two consecutive odd numbers there sum is 130 . find the two numbers ?

[Q4]

A) Factorize: ① $x^2 - 7x + 12$ ② $4x^4 + y^4$

B) If : $\frac{7^x \times 6^x}{14^2} = 3^{2-m}$, *then find the value of* $x + m$?

[Q5]

A) Factorize : ① $x^4 - 8x$ ② $ax - ay + x - y$

B) A basket contains balls numbered from 1 to 15 . a ball is drawn randomly. Calculate the probability of drawing ball carrying :

① An even number

② A number divisible by 3

③ A prim number



End of the questions

Model Examinations of the School Book on Algebra and Statistics

Model 1

Answer the following questions :

1 Complete the following :

1. If $2^{x+3} = 1$, then $x =$ ....
2. If $x + y = 4$, $x - y = 2$, then $x^2 - y^2 =$ ....
3. The solution set of the equation : $x^2 - 1 = 8$, where $x \in \mathbb{Z}^+$ is ....
4. If $2^x = 3$, then $8^{-x} =$ ....
5. $1 - \frac{3}{4} =$ .... %

2 Choose the correct answer :

1. $\frac{5^{-2} \times \sqrt{5}}{5\sqrt{5}} =$ ....
   (a) $\frac{1}{125}$ (b) $\frac{1}{25}$ (c) 25 (d) 125
2. $\mathbb{Z} - \mathbb{Z}^- =$ ....
   (a) $\mathbb{Z}^+$ (b) $\mathbb{N}$ (c) $\varnothing$ (d) $\{0\}$
3. The volume of a cube of side length 3 cm. equals .... cm^3.
   (a) 9 (b) 12 (c) 27 (d) 81
4. The expression : $x^2 + k x + 36$ is a perfect square when k equals ....
   (a) ± 6 (b) ± 8 (c) ± 12 (d) ± 18
5. A regular die is thrown and observed the upper face, then the probability of appearance a number divisible by 3 is ....
   (a) $\frac{1}{4}$ (b) $\frac{1}{3}$ (c) $\frac{1}{2}$ (d) $\frac{3}{4}$
6. If $\left(\frac{5}{3}\right)^x = \frac{27}{125}$, then $x =$ ....
   (a) -5 (b) -3 (c) 3 (d) 5

3 Factorize each of the following expressions :

1. $x^2 + 8x + 15$ 2. $2x^2 + 7x + 3$ 3. $x^3 - 1$ 4. $a x - 7a + 3x - 21$

4 [a] Simplify to the simplest form : $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$

[b] Find the S.S. for the following equation where $x \in \mathbb{R}$: $x^2 - 8x + 12 = 0$

5 [a] A bag contains a number of similar balls , 5 of them are white and the rest are red. If the probability of drawing a red ball is $\frac{2}{3}$, find the number of all the balls.

[b] If $3^x = 27$, $4^{x+y} = 1$, **find the values of :** x and y

Model 2

Answer the following questions :

1 Complete the following :

1 If $7^{x-1} = 3^{x-1}$, then $x =$ ....

2 $x^3 -$ .... $= (x-2)($ .... $+ 2x + 4)$

3 $(5x - 2y)(25x^2 + 10xy + 4y^2) =$ ....

4 If $\frac{2x}{5} = 6$, then $x =$ ....

5 A bag contains 9 cards labeled by numbers from 1 to 9 , a card is drawn randomly , then the probability that the card carries an odd number is ....

2 Choose the correct answer :

1 If $x^3 y^{-3} = 8$, then $\frac{y}{x} =$ ....

(a) 8 (b) $\frac{1}{8}$ (c) $\frac{1}{2}$ (d) 2

2 The expression : $x^2 + 4x + a$ is a perfect square when a equals ....

(a) 3 (b) 4 (c) 8 (d) 16

3 The S.S. of the equation : $x^2 - x = 0$ is .... where $x \in \mathbb{R}$

(a) $\{0\}$ (b) $\varnothing$ (c) $\{0 , 1\}$ (d) $\{1\}$

4 In the figure opposite the shaded region represents .... the circle.

(a) $\frac{1}{8}$ (b) $\frac{1}{6}$

(c) $\frac{1}{4}$ (d) $\frac{1}{3}$

5 If $3^x + 3^x + 3^x = 1$, then $x =$ ....

(a) -1 (b) 0 (c) $\frac{1}{3}$ (d) 1

6 If $6^x = 11$, then $6^{x+1} =$ ....

(a) 12 (b) 22 (c) 66 (d) 72

3 Factorize each of the following :

1 $4x^2 - 9$

2 $x^3 + 8$

3 $x^2 - 5x$

4 $x^2 - x - 6$

4 [a] Find in $\mathbb{R}$ the S.S. of the following equation : $x^2 - x - 6 = 0$

[b] Simplify to the simplest form : $\frac{(\sqrt{2})^5 \times 3^{-2}}{3 \times (\sqrt{2})^9}$

5 **[a]** If $\frac{2^{x} \times 3^{x}}{(12)^{x}} = \frac{1}{2}$ find the value of x

[b] A bag contains a number of similar balls. Some of them are red, 2 greens, 4 blues. If the probability of drawing a ball with green colour is $\frac{1}{6}$, find the number of red balls.

Model for the merge students

Answer the following questions :

1 **Choose the correct answer from those given :**

1. The solution set of the equation : $x^2 + 25 = 0$ in $\mathbb{R}$ is ....
   (a) $\{-5, 5\}$ (b) $\{5\}$ (c) $\{-5\}$ (d) $\varnothing$

2. If the expression : $x^2 + a x + 9$ is a perfect square, then a = ...
   (a) 3 (b) 6 (c) 9 (d) 18

3. If $(x - 1)$ is one factor of expression : $x^2 - 4x + 3$, then the other factor is ....
   (a) $x + 3$ (b) $x + 1$ (c) $x - 3$ (d) $x - y$

4. If $\left(\frac{5}{3}\right)^{x} = \left(\frac{3}{5}\right)^{2}$, then x = ...
   (a) -2 (b) 2 (c) $\frac{1}{2}$ (d) $-\frac{1}{2}$

5. The probability of the sure event = ...
   (a) 0 (b) $\frac{1}{2}$ (c) 1 (d) 2

2 **Join from the column (A) to the suitable in the column (B) :**

Column (A)	Column (B)
1. If $a^2 - b^2 = 15$, $a + b = 3$, then $a - b$ = ...	• 5
2. If one digit of the number 37450 is chosen at random, then the probability of the chosen number is even = ...	• 6
	• $\frac{2}{5}$
3. If $(x + 3y)^2 = x^2 + k x y + 9y^2$, then k = ...	• 0
4. $4^3 + 4^3 + 4^3 + 4^3$ = ...	• 4^4
5. The probability of the impossible event = ...	

3 Complete each of the following :

1. $x^2 - y^2 = (\cdots\cdots - \cdots\cdots)(\cdots\cdots + \cdots\cdots)$
2. $x^3 - 8 = (\cdots\cdots - \cdots\cdots)(x^2 + 2x + \cdots\cdots)$
3. $x^2 - 5x + 6 = (x - \cdots\cdots)(\cdots\cdots - 3)$
4. $(a + b)x + (a + b)y = (a + \cdots\cdots)(\cdots\cdots + \cdots\cdots)$

4 Put (✔) for the correct statements and (✘) for the incorrect ones :

1. A school has 320 pupils , if the probability of the chosen pupil is a boy , is 0.6 , then the number of girls = 120 ( )
2. If $3^x = 27$, then $x = \frac{1}{3}$ ( )
3. A card is drawn at random , from cards numbered from 1 to 10 , then the probability that the card carries an odd number greater than 3 is $\frac{3}{10}$ ( )
4. The positive real number which if its square is added to its three times , the result will be 28 is 4 ( )
5. The solution set of the equation : $x(x - 3)(x + 5) = 0$ in $\mathbb{R}$ is $\{0 , 3 , -5\}$ ( )

5 Complete the solution in which the expression : $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$ in its simplest form :

$$\frac{(2^{\cdots\cdots})^n \times (\cdots\cdots \times 3)^{2n}}{2^{4n} \times 3^{2n}} = \frac{2^{\cdots\cdots} \times \cdots\cdots^{2n} \times 3^{2n}}{2^{4n} \times 3^{2n}}$$

$$= 2^{\cdots\cdots + 2n - \cdots\cdots} \times 3^{2n \cdots\cdots}$$

$$= 2^{\cdots\cdots} \times 3^{\cdots\cdots}$$

$$= \cdots\cdots$$

Schools Examinations of the previous years on Algebra and Statistics





1 Cairo Governorate

Heliopolis Educational Zone

Answer the following questions :

1 Choose the correct answer :

1. If $x^2 + kx + 25$ is a perfect square , then k = ...
   (a) 5 (b) 10 (c) ± 10 (d) ± 5
2. If $5^{x+2} = 1$, then x = ...
   (a) 1 (b) – 2 (c) 2 (d) 5
3. If $x^2 - a = (x-3)(x+3)$, then a = ...
   (a) 2 (b) – 2 (c) 9 (d) – 9
4. The half of the number 2^8 is ....
   (a) 2^4 (b) 2^7 (c) 4 (d) – 4
5. If $\left(\frac{2}{3}\right)^x = \frac{8}{27}$, then x = ...
   (a) 2 (b) 1 (c) 8 (d) 3
6. If $x^3 + 8 = (x+2)(x^2 + k + 4)$, then k = ...
   (a) $-2x$ (b) $4x$ (c) $2x$ (d) $-4x$

2 Complete the following :

1. The S.S. of $x^2 + 9 = 0$ in $\mathbb{R}$ is ....
2. The multiplicative inverse of the number $(\sqrt{3})^4$ is ....
3. If $(x-4)$ is a factor of the expression : $x^2 - 5x + 4$, then the other factor is ....
4. The probability of any event A ∈ ....
5. $(\sqrt{5})^3 \div 5\sqrt{5}$ = ...

3 [a] Factorize each of the following :

1. $ax + bx + 5a + 5b$
2. $x^3 - 1$
3. $x^4 + 4$

[b] Find in $\mathbb{R}$ the S.S. of the equation : $x^2 + 9x + 18 = 0$

4 [a] If $3^{x-1} = 27$, **find the value of :** x

[b] Simplify to the simplest form : $\frac{(\sqrt{5})^7 \times (\sqrt{5})^3}{(\sqrt{5})^9 \times (\sqrt{2})^{-3}}$

5 [a] If $x = 3$, $y = \sqrt{3}$, **find the value of :** $\left(\frac{y}{x}\right)^{-2}$

[b] **Simplify the following to the simplest form :** $\frac{4^{x} \times 6^{2x}}{2^{4x} \times 3^{2x}}$

2 Cairo Governorate

East Nasr City Zone
Manaret Heliopolis School



Answer the following questions :

1 Complete each of the following :

1. The probability of the impossible event is ....
2. $a x + b y + b x + a y =$ ....
3. Fifth the number 5^{20} is ....
4. If $3^{x} = 5$, then $(27)^{x} =$ ....
5. The solution set of the equation : $x^2 + 1 = 0$ in $\mathbb{R}$ is ....

2 Choose the correct answer :

1. If the probability that a student succeeds in a subject is 0.8 , then the probability of his failure is ....
   (a) 0 (b) 1 (c) 0.2 (d) 0.8
2. If $6^{x} = 7$, then $6^{x+1} =$ ....
   (a) 42 (b) $\frac{7}{6}$ (c) 1 (d) 6
3. $4^3 + 4^3 + 4^3 + 4^3 =$ ....
   (a) 4^{12} (b) 4^9 (c) 4^4 (d) 4^{81}
4. The solution set of equation : $x^2 - 5x + 4 = 0$ in $\mathbb{R}$ is ....
   (a) $\{1 , 4\}$ (b) $\{2 , -2\}$ (c) $\varnothing$ (d) $\{1\}$
5. A die is thrown then the probability of appearance number 7 is ....
   (a) 0 (b) 1 (c) $\frac{2}{5}$ (d) $\frac{1}{6}$
6. If $x^2 + k x + 25$ is a perfect square , then k = ...
   (a) 5 (b) 10 (c) ± 10 (d) ± 5

3 [a] **Factorize each of the following completely :**

1. $3a^2 + 7a + 2$
2. $5\ell + 10m + a\ell + 2am$

[b] **Find the value of the x in each of the following :**

1. $(x - 3)^7 = 128$
2. $4^{2x-1} = 1024$
3. $5^{x-7} = 1$

4 **[a] Simplify each of the following :**

1. $\dfrac{(\sqrt{3})^{-4} \times (\sqrt{2})^{-5} \times (\sqrt{3})^{-3}}{(\sqrt{3})^{-9} \times (\sqrt{2})^{-7}}$ 2. $\left(\dfrac{2\sqrt{3}}{3\sqrt{2}}\right)^4$

[b] A bag contains balls labeled by the numbers from 1 to 15 if a ball is drawn at random
Find the probability that the drawn ball carries each of the following :

1. An even number. 2. A number divisible by 3 3. A prime number.

5 **[a]** In producing 600 electric lamps , if the probability of the defected lamps is 0.05 , then find the number of the good lamps and also the number if the defected.

[b] Find in ℝ the solution set of each of the following :

1. $x^2 - 9 = 0$ 2. $x^2 = 5x$ 3. $3x = -x^2 - 2$



3 Cairo Governorate

Zietoun Educational Administration
Gomhouria Language School



Answer the following questions :

1 **Choose the correct answer :**

1. If $6^x = 7$, then $6^{x+1} =$ ....
   (a) 8 (b) 13 (c) 36 (d) 42
2. If the expression : $a x^2 + 12 x + 9$ is a perfect square , then a = ...
   (a) 3 (b) 4 (c) 9 (d) 16
3. If $x y = 3$, $(x + y)^2 = 16$, then $x^2 + y^2 =$ ....
   (a) 4 (b) 10 (c) 13 (d) 8
4. If a regular die is tossed once , then the probability of appearing the number 7 is ....
   (a) $\frac{1}{7}$ (b) $\frac{1}{6}$ (c) 1 (d) 0
5. $3^{zero} + 3^{-1} - \left(\frac{1}{\sqrt{3}}\right)^2 =$ ....
   (a) 3 (b) 1 (c) $\frac{1}{3}$ (d) 0
6. If $x + y = 3$, $x^2 - x y + y^2 = 5$, then $x^3 + y^3 =$ ....
   (a) 15 (b) 25 (c) 8 (d) 7

2 **Complete each of the following :**

1. If three times a number is 3^3 , then $\frac{2}{3}$ this number = ...
2. If $x + y = 7$ and $a - 2b = 4$, then the numerical value of the expression :
   $a(x + y) - 2b(x + y) =$ ....

3 If $\left(\frac{2}{3}\right)^{x} = \frac{27}{8}$, then $x =$ ....

4 A class has 50 students (boys and girls) , if the probability of choosing a girl randomly is 0.6 , then the number of boys = ...

5 If $x^3 y^{-3} = 8$, then $\frac{y}{x} =$ ....

3 [a] **Factorize each of the following completely :**

1 $9 - y^2$

2 $4x^4 + 81y^4$

[b] If $2^{x-2} = \left(\frac{1}{2\sqrt{2}}\right)^2$ **Find the value of :** x

4 [a] **Find in $\mathbb{R}$ the S.S. of the equation :** $3x^2 + 15x - 18 = 0$

[b] **Simplify to the simplest form :** $(3^{x-1} \times 2^{x+1}) \div 6^{x-1}$

5 [a] A positive real number , if its square is added to three times of it then the result equals 28 **Find this number.**

[b] A box has 15 regular balls , 3 of them are white , 9 of them are black , a ball is choosing randomly.

Find the probability of the drawn ball is :

1 Black.

2 Not white and not black.

4 Giza Governorate

Omranea Direction
Baraem Misr Language School



Answer the following questions :

1 Choose the correct answer :

1 The S.S. of the equation : $x^2 - 1 = 8$ in $\mathbb{R}$ is ....

(a) $\varnothing$ (b) $\{3\}$ (c) $\{-3\}$ (d) $\{-3 , 3\}$

2 If $6^{x} = 7$, then $6^{x+1} =$ ....

(a) 8 (b) 13 (c) 36 (d) 42

3 If a die is thrown once , then the probability that the number 5 appears is ....

(a) $\frac{5}{6}$ (b) $\frac{1}{2}$ (c) $\frac{1}{6}$ (d) $\frac{0}{6}$

4 If $7^{x-3} = 5^{x-3}$, then $x =$ ....

(a) 5 (b) 7 (c) 3 (d) 0

5 $2^{12} \times 3^{12} =$ ....

(a) 6^2 (b) 6^4 (c) 6^{12} (d) 6^{24}

6 If the expression : $x^2 + 14x + b$ is a perfect square , then b = ...

(a) 2 (b) 7 (c) 14 (d) 49

2 Complete each of the following :

1 $\left(\frac{3}{5}\right)^x = \frac{27}{125}$, then $x =$ ....

2 The solution set of the equation : $x^2 + 9 = 0$ in $\mathbb{R}$ is ....

3 If the probability that a student failed is 7% , then the probability that this student succeeded is ....

4 If $3^x = 81$, then $x =$ ....

5 The age of a man now x years, then his age 7 years ago is .... years.

3 [a] Factorize each of the following :

1 $8x^2 - 50$ 2 $x^4 + 4y^4$

[b] If a real number is added to its square the result will be 12 , find this number.

4 [a] Find in $\mathbb{Q}$ the solution set of :

1 $x^2 - x = 12$ 2 $4x^2 - 25 = 0$

[b] If $\frac{8^x \times 9^x}{18^x} = 64$, **find :** x

5 [a] A box contains a similar balls , 8 white balls , 5 red balls and 7 black balls , if we choose a ball , **then find the probability that the ball is :**

1 White. 2 Black or red.

[b] Find the value of x if : $2^{x-2} = 16$

5 Giza Governorate

Dokki District
Modern Narmer Language School



Answer the following questions :

1 Complete each of the following :

1 If $x = 3$ is a solution of the equation : $x^2 + 2x + k = 0$, then k = ...

2 The solution set of the equation : $x^2 + 4 = 0$ in $\mathbb{R}$ is ....

3 The quadratic equation : (x + ...) ($3x - 2$) = 0 is equivalent to .... + ... − 10 = 0

4 If $3^{x-2} = 27$, then $x =$ ....

5 There are 21 boys and 15 girls in a classroom , if a student is chosen at random , then the probability that the student is a boy = ...

2 **Choose the correct answer :**

1 The solution set in $\mathbb{R}$ of the equation : $(x-1)^2=0$ is

(a) $\{0\}$ (b) $\{-1\}$ (c) $\{1, -1\}$ (d) $\{1\}$

2 If $3^x + 3^x + 3^x = 1$, then $x =$ ....

(a) -1 (b) 0 (c) 1 (d) 2

3 3^{-2} equals ....

(a) 9 (b) $\frac{1}{9}$ (c) $-\frac{1}{9}$ (d) -9

4 $2^{12} \times 3^{12} =$ ....

(a) 6^2 (b) 6^4 (c) 6^{12} (d) 6^{24}

5 A die is thrown once , then the probability that 5 appears is ....

(a) $-\frac{5}{6}$ (b) zero (c) $\frac{1}{6}$ (d) $\frac{5}{6}$

6 The expression : $x^2 + a\,x + 2$ can be factorized , then a = ...

(a) 1 (b) 2 (c) 3 (d) 4

3 [a] **Solve in $\mathbb{R}$ the equations :**

1 $x^2 - x - 12 = 0$ 2 $x(x-2) - 2(2-x) = 0$

[b] The length of a rectangle is more than its width by 5 cm. If its area is 36 cm^2 **, then find its dimensions and its perimeter.**

4 [a] **Simplify :** $\frac{4^{x+1} \times 9^{2-x}}{6^{2x}}$, then find the value of the answer when $x = 2$

[b] If the sum of the square of a positive number and three times this number is 28 **, then find the value of this number.**

5 [a] **Find the value of x if :** $3^{2x-3} = 243$

[b] A bag contains 20 balls numbered from 1 to 20 , if one ball is drawn at random **, then find the probability that :**

1 The number is a multiple of 4

2 The number is less than or equal 7

6 Giza Governorate

6 October Directorate



Answer the following questions :

1 **Choose the correct answer :**

1 $(x-2)^2 =$ ....

(a) $x^2 - 4$ (b) $(2 + x)^2$ (c) $x^2 + 4$ (d) $x^2 - 4x + 4$

2 $4^3 + 4^3 + 4^3 + 4^3 =$ ....

(a) 4^3 (b) 4^4 (c) 4^{12} (d) 4^{81}

3 If $k x^2 - 12 x + 4$ is a perfect square , then k = ...

(a) -6 (b) -4 (c) -2 (d) 9

4 If $\frac{a}{b} = 1$, then $4a - 4b =$ ....

(a) 8 (b) 4 (c) 1 (d) 0

5 If $x + y = 3$, $x^2 - xy + y^2 = 5$, then $x^3 + y^3 =$ ....

(a) 15 (b) 25 (c) 8 (d) 7

6 If $3^x = 2$, then $27^x =$ ....

(a) 9 (b) 4 (c) 8 (d) 1

2 Complete the following :

1 If $x^3 y^{-3} = 8$, then $\frac{y}{x} =$ ....

2 A bag contains 9 cards labeled by numbers from 1 to 9 , a card is drawn randomly , then the probability that this card carries an odd number = ...

3 The S.S. of the equation : $x^2 + 1 = 0$ in $\mathbb{R}$ is ....

4 If $\frac{2x}{5} = 6$, then $x - 5 =$ ....

5 $(a - 2)(2a - 3) =$ .... $- 7a +$ ....

3 Factorize each of the following :

1 $3x^2 - 48$

2 $x^2 - 7x + 10$

3 $x^3 + 2x^2 - 4x - 8$

4 $2x^3 - 16y^3$

4 [a] Find the S.S. in $\mathbb{R}$:

1 $3^{2n-5} = 1$

2 $\left(\frac{2}{3}\right)^{2n} = \frac{81}{16}$

[b] A bag contains cards numbered from 1 to 20 and card drawn randomly

Find the probability of :

1 Getting a number divisible by 4

2 Getting a number multiple of 7

5 [a] Find the real number which if we added its square to its three times , it becomes 28

[b] **Simplify :** $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$



7 Alexandria Governorate

Eastern Educational Zone
Taymour English School



Answer the following questions :

1 Complete the following :

1. If $a = \sqrt{3}$, $b = \sqrt{2}$, then the value of $\frac{a^4}{b^4} =$ ....
2. $\frac{(10)^2 \times (10)^{-7}}{(0.1)^2 \times 0.001} =$ ....
3. A numbered card is selected at random from a set of similar cards numbered from 1 to 24 , the probability of getting a card carries a multiple of 4 is ....
4. $(9a^2 - 4b^2) = (3a -$ ....$)$ $($............... $+ 2b)$
5. $(x + 3y)^2 = x^2 +$ .... $+ 9y^2$

2 Choose the correct answer :

1. If $(x + 3)$ is a factor of the expression : $x^2 + x - 6$, then the other factor is ....
   (a) $(x - 2)$ (b) $(x - 3)$ (c) $(x + 2)$ (d) $(x + 6)$
2. If $3^x = 27$, $4^{x+y} = 1$, then $y =$ ....
   (a) 0 (b) 3 (c) -3 (d) 1
3. The S.S. of the equation : $x^2 - 3 = 0$ in $\mathbb{R}$ is ....
   (a) $\{3 , -3\}$ (b) $\{\sqrt{3}\}$ (c) 9 (d) $\{-\sqrt{3} , \sqrt{3}\}$
4. $\left(\sqrt{3} + \sqrt{2}\right)^9 \left(\sqrt{3} - \sqrt{2}\right)^9 =$ ....
   (a) 1 (b) $\sqrt{5}$ (c) $\sqrt{6}$ (d) 5
5. Which of the following may be equal the probability of an event ....
   (a) -0.73 (b) 1.23 (c) 79 % (d) $\frac{4}{3}$
6. If $x^3 + 27 = (x + 3)(x^2 + k + 9)$, then $k =$ ....
   (a) $-6x$ (b) $-3x$ (c) $3x$ (d) $6x$

3

[a] Simplify : $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$

[b] Find the value of x : $\left(\frac{2}{5}\right)^{2x+1} = \frac{8}{125}$

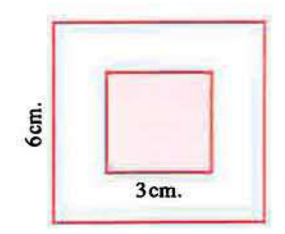
4 Factorize each of the following :

1. $(x + 2)^3 - 4x - 8$
2. $a^2 + 2ab + b^2 - c^2$
3. $5a^2 - 18a + 16$
4. $xy + 5y + 7x + 35$

5 **[a] Find the S.S. in $\mathbb{R}$:** $2x^3 = 18x$

[b] In the opposite figure :

Two squares, if a person shoot at a picture in the figure then find the probability of hitting the shaded part.





Mid Educational Zone
Maths Supervision



Answer the following questions :

1 **Complete each of the following :**

1. The simplest form of : $(\sqrt{3})^3 \times (\sqrt{3})^5 =$ ....
2. If $x + y = 5$, $x - y = 3$, then $x^2 - y^2 =$ ....
3. If $x - 6 = 0$, then $x =$ ....
4. $y^3 -$ .... $= (y - 2)(y^2 +$ .... $+ 4)$
5. $(\sqrt{7} + \sqrt{6})^8 (\sqrt{7} - \sqrt{6})^8 =$ ....

2 **Choose the correct answer :**

1. The expression : $x^2 + 8x + a$ is a perfect square when a = ...
   (a) -4 (b) 4 (c) 8 (d) 16
2. A die is thrown once , then the probability of appearance 7 on the upper face is ....
   (a) $\frac{-5}{6}$ (b) $\frac{1}{6}$ (c) 0 (d) $\frac{5}{6}$
3. If $(x + 3)^{zero} = 1$, then $x \in$ ....
   (a) $\mathbb{R} - \{3\}$ (b) $\mathbb{R} - \{-3\}$ (c) $\{3\}$ (d) $\mathbb{R}$
4. If the age of Kamal now is x years , then his age 3 years ago was .... years.
   (a) $x + 3$ (b) $3x$ (c) $x - 3$ (d) $6x$
5. The multiplicative inverse of 1 is ....
   (a) 0 (b) 1 (c) 2 (d) 3
6. $3^3 + 3^3 + 3^3 =$ ....
   (a) 3^3 (b) 3^4 (c) 3^{12} (d) 3^{81}

3 **[a] Factorize :**

1. $9x^2 - 4$
2. $10y^2 - 7y - 12$
3. $4x^4 + 1$

[b] Find the solution set in $\mathbb{R}$ for : $2x^2 - 2x - 12 = 0$

4 [a] **Find in the simplest form :** $\frac{x^6 \times x^2}{x^3}$ where $x \neq 0$

[b] **Factorize :** $3x - 21 + ax - 7a$

5 [a] A numbered card is selected randomly from a set of similar cards numbered from 1 to 15

Find the probability of getting a card carries :

1 A prime number.

2 A number divisible by 3

[b] If $2^{x-2} = 32$ **, then find the value of :** x

9 El-Kalyoubia Governorate

Maths Supervision



Answer the following questions :

1 Choose the correct answer :

1 $\mathbb{Z} - \mathbb{Z}^- =$ ....

(a) $\mathbb{Z}^+$ (b) $\mathbb{N}$ (c) $\varnothing$ (d) $\{0\}$

2 The volume of the cube of side length 3 cm. equals .... cm^3

(a) 9 (b) 12 (c) 27 (d) 81

3 The expression : $x^2 + 4x + a$ is a perfect square when a = ...

(a) 3 (b) 4 (c) 8 (d) 16

4 The S.S. of the equation : $x^2 - x = 0$ is .... in $\mathbb{R}$

(a) $\{0\}$ (b) $\varnothing$ (c) $\{0, 1\}$ (d) $\{1\}$

5 If $(x - 1)$ is one factor of the expression : $x^2 - 4x + 3$, then the other factor is ....

(a) $x + 3$ (b) $x + 1$ (c) $x - 3$ (d) $x - 4$

6 If $\left(\frac{5}{3}\right)^x = \left(\frac{3}{5}\right)^2$, then $x =$ ....

(a) -2 (b) 2 (c) $\frac{1}{2}$ (d) $\frac{-1}{2}$

2 Complete :

1 If $7^{x-1} = 3^{x-1}$, then $x =$ ....

2 A bag contains 9 cards labled by numbers from 1 to 9 , a card is drawn randomly , then the probability that the card carries an odd number is ....

3 $a^{-4} + 1 = a^{-4}$ (.............. + ...) where $a \neq 0$

4 $1 - \frac{3}{4} =$ ....

5 $4^3 + 4^3 + 4^3 + 4^3 = 4^{\cdots\cdots}$

3 **[a] Factorize :**

1 $x^2 - y^2$ 2 $y^3 + 8$

[b] Find the S.S. of the following equation in $\mathbb{R}$: $x^2 - x - 6 = 0$

4 **[a] Factorize :**

1 $a x - 7 a + 3 x - 21$ 2 $x^2 - 5 x$

[b] If $3^x = 27$, $4^{x+y} = 1$, **find the value of : x , y**

5 **[a] Find in the simplest form : $\frac{4^{x+1} \times 9^{2-x}}{(6)^{2x}}$** , then calculate the result when $x = 1$

[b] If one digit of the number 37450 chosen at random , find the probability that the chosen digit is an even number.

10 El-Monofia Governorate

Kwesna Educational Directorate
Mathematics Supervision



Answer the following questions : *(Calculator is premitted)*

1 **Choose the correct answer from those given :**

1 $0.002 \times 0.05 =$ ....

(a) 10^{-5} (b) 10^{-4} (c) 10^4 (d) 10^5

2 The expression : $(x - 2 y)(x^2 + 2 x y + 4 y^2)$ equals ....

(a) $x^3 - 2 y^3$ (b) $x^3 - 8 y^3$ (c) $x^3 + 8 y^3$ (d) $x^3 + 18 y^3$

3 The value of the expression : $5^{20} + 5^{21}$ equals ....

(a) 5×5^{40} (b) 5×5^{41} (c) 6×5^{20} (d) 6×5^{21}

4 The value of the expression : $2^5 + \left(\sqrt{2}\right)^{10}$ equals ....

(a) 2^6 (b) 2^{10} (c) $\left(\sqrt{2}\right)^{15}$ (d) $\left(\sqrt{2}\right)^{20}$

5 If the probability of choosing a boy from a class of 40 students is 0.375 , then the number of girls is .... girls.

(a) 35 (b) 25 (c) 20 (d) 15

6 The solution set of the equation : $(x - 1)^2 = 0$ in $\mathbb{R}$ is ....

(a) $\{-1\}$ (b) $\{1\}$ (c) $\{-1 , 1\}$ (d) $\{2\}$

2 **Complete :**

1 The expression : $x^2 - 2 x + k$ is perfect square when k = ...

2 If $3^x \times 2^{-x} = 1.5$, then $x =$ ....

3 If $a^2 + b^2 = 7$, $a b = 3$, then $(a - b)^2 =$ ....

4 $x(y - z) + L(y - z) = (y - z)$ (..............)

5 $\left(\frac{\sqrt{3}}{9}\right)^{-1} = (\sqrt{3})^{\cdots\cdots}$

3 [a] An integer is added to its multiplicative inverse the result equals 2 Find the number.

[b] **Factorize each of the following :**

1 $3x^2 - 15x + 12$

2 $\frac{1}{3}x^3 - 9$

3 $x^4 + 9x^2 + 81$

4 [a] **Simplify :** $\frac{4^{x+1} \times 9^{2-x}}{(6)^{2x}}$, then calculate its value at $x = 1$

[b] If $x = \frac{\sqrt{3}}{2}$, $y = \frac{1}{\sqrt{3}}$, $z = \frac{\sqrt{2}}{2}$, **find the value :** $x^2 + (x z)^2 \times y^2$

5 [a] A set of cards numbered from 0 to 10 , if a card is drawn randomly

, find the probability of each :

1 Drawing a card carries odd number.

2 Drawing a card carries a number divisible by 5

[b] **Factorize each of the following :**

1 $a x - 7 a + 3 x - 21$

2 $9x^2 - 25$

11 El-Dakahlia Governorate

Maths Supervision



Answer the following questions :

1 Complete each of the following :

1 If $3^{x-1} = 27$, then $x =$ ....

2 If $(x - 5)^0 = 1$, then $x \in$ ....

3 $a + b = 2(x + y) = 14$, then $a(x + y) + b(x + y) =$ ....

4 The probability of impossible event = ...

5 If the perimeter of square x cm. , then its area = ...

2 Choose the correct answer :

1 If $6^x = 7$, then $6^{x+1} =$ ....

(a) 8 (b) 13 (c) 36 (d) 42

2 If the product of multiplying four by a number equals 48 , then the third of this number = ……………

(a) 4 (b) 8 (c) 12 (d) 16

3 The value of $2^5 + \left(\sqrt{2}\right)^{10} =$ ……………

(a) 2^6 (b) 2^{10} (c) $\left(\sqrt{2}\right)^{15}$ (d) $\left(\sqrt{2}\right)^{20}$

4 The S.S. of the equation : $x^3 + 9x = 0$ in $\mathbb{R}$ is ……………

(a) $\{0 , 3\}$ (b) $\{0\}$ (c) $\{0 , -3\}$ (d) $\{0 , 3 , -3\}$

5 If $2^x = 5$, then $8^x =$ ……………

(a) $\frac{5}{8}$ (b) 25 (c) 125 (d) $\frac{64}{125}$

6 If $y^3 - a = (y - 2)(y^2 + 2y + 4)$, then a = ……………

(a) 2 (b) 4 (c) 8 (d) – 8

3 Factorize :

1 $x^4 + y^4 - 11x^2y^2$

2 $9x^2 - 4a^2 + y^2 + 6xy$

3 $3x^3 - 2x^2 + 12x - 8$

4 $25x^2 - 30x + 9$

4 [a] If the length of a rectangle 5 cm. more than its width and its area 36 cm². **Find its perimeter.**

[b] If $\left(\sqrt{\frac{2}{3}}\right)^x = \frac{4}{9}$ **Find the value of :** $\left(\frac{2}{3}\right)^{x-1}$

5 [a] **Prove that :** $\frac{(27)^{x-1} \times 8^x}{\left(2\sqrt{3}\right)^{2x} \times \left(3\sqrt{2}\right)^{2x}} = \frac{1}{27}$

[b] A team plays 30 matches in national league , its drawn probability is 0.3 and its win probability is 0.6 **Calculate the number of loss matches.**

12 Ismailia Governorate

Directorate of Education
Elmanar Language School



Answer the following questions :

1 Complete each of the following :

1 $4a(x + y) - 3b(x + y) = (x + y)$ (…………… – ……………)

2 The S.S. of the equation : $x^2 + 3x = 0$ in $\mathbb{R}$ is ……………

3 If $3^x = 27$, then $x =$ ……………

4 The probability of impossible event is ……………

5 If the probability of absent pupils in a school is $\frac{2}{19}$, then the probability of present pupils is ....

2 Choose the correct answer :

1 If $(x-5)^{zero} = 1$, then $x \in$ ....

(a) $\mathbb{R} - \{5\}$ (b) $\mathbb{R} - \{-5\}$ (c) $\{5\}$ (d) $\mathbb{R}$

2 The S.S. in $\mathbb{R}$ of the equation : $x^2 + 25 = 0$ is ....

(a) $\{5\}$ (b) $\{5, -5\}$ (c) $\varnothing$ (d) $\{-5\}$

3 If $5^x = 2$, then $5^{x+2} =$ ....

(a) 25 (b) 2 (c) 50 (d) 100

4 A bag contains 20 balls , 8 of them are white and the rest are black , then the probability of the drawn ball is black is ....

(a) 1 (b) 0.6 (c) 0 (d) $\frac{8}{20}$

5 Which of the following can be probability of an event ?

(a) 1.2 (b) $\frac{4}{3}$ (c) -0.2 (d) 37 %

6 If $x^2 - a = (x-3)(x+3)$, then a = ...

(a) 3 (b) -3 (c) 9 (d) -9

3

[a] Factorize : 1 $x^3 - 3x^2 + 6x - 18$ 2 $3x^3 - 81$

[b] If $\left(\frac{2}{5}\right)^{2x-1} = \frac{8}{125}$ **Find the value of :** x

4

[a] A positive real number if you add its square to its three times the result will be 28 find the number.

[b] Find in $\mathbb{R}$ the S.S. of : $x^2 - 8x = -15$

5

[a] If a card is chosen randomly from 10 cards numbered from 1 to 10 **, then the probability that the number on the chosen card is :**

1 Even. 2 Divisible by 3

3 Even prime.

[b] Prove that : $\frac{(27)^{x-1} \times 8^x}{(2\sqrt{2})^{2x} \times (3\sqrt{3})^{2x}} = \frac{1}{27}$

13 Damietta Governorate

Inspection of mathematics



Answer the following questions :

1 Choose the correct answer from those given :

1. $3^{-2} =$ ....
   (a) -9 (b) $\frac{1}{9}$ (c) $-\frac{1}{9}$ (d) 9
2. $\sqrt{100-64} = 10 -$ ....
   (a) 4 (b) 6 (c) 8 (d) -6
3. If a coin thrown once , then the probability of appearing tail = ...
   (a) 1 (b) 0.3 (c) 0.5 (d) 0
4. The solution set of the equation : $x^2 + 9 = 0$ in $\mathbb{R}$ is ....
   (a) $\{3\}$ (b) $\{-3\}$ (c) $\varnothing$ (d) $\{3, -3\}$
5. $4^3 + 4^3 + 4^3 + 4^3 =$ ....
   (a) 4^3 (b) 4^4 (c) 4^{12} (d) 4^{81}
6. The expression : $a x^2 - 40 x + 25$ is a perfect square when a = ...
   (a) 2 (b) 4 (c) 9 (d) 16

2 Complete each of the following :

1. If the probability that a pupil succeed is 0.8 , then probability of his failure = ...
2. If $7^x = 1$, then $x =$ ....
3. $2 \times 6 - 8 \div 4 =$ ....
4. If $2^x = 5$, then $2^{-x} =$ ....
5. If $x - y = 3$ and $x + y = 4$, then $x^2 - y^2 =$ ....

3 **[a] Simplify :** $\frac{(\sqrt{3})^8 \times (\sqrt{3})^{-14}}{(\sqrt{3})^{-4}}$

[b] Find the solution set of the following equation in $\mathbb{R}$: $x^2 - 8x = -15$

4 **[a] Factorize each of the following expressions :**

1. $x^2 - 4y^2$
2. $x^4 + 4y^4$

[b] Find the solution set of the following equation in $\mathbb{R}$: $3^{x-4} = 9$

5 **[a]** If $a = \sqrt{2}$, $b = \sqrt{3}$, **find the numerical value of :** $\frac{b^4 - a^4}{b^2 + a^2}$

[b] A box contains 5 white , 2 red , 3 green balls , a ball is drawn randomly from the box

Calculate the probabilities of the following events :

1 The ball is white. 2 The ball yellow. 3 The ball is not red.

14 El-Fayoum Governorate

Directorate of Education
Supervision of Mathematics



Answer the following questions :

1 **Choose the correct answer :**

1 If $\frac{a}{b} = 1$, then $4a - 4b =$ ....

(a) 8 (b) 4 (c) 1 (d) 0

2 If the probability that a pupil succeeds is 0.7 , then the probability of his failure is ....

(a) 0.7 (b) 0.07 (c) 0.3 (d) 0.03

3 If the age of Ahmed now is x years , then the square of his age is .... years.

(a) x^2 (b) $2x$ (c) $2x^2$ (d) $x + 2$

4 $(-1)^3 + (-1)^5 =$ ....

(a) 0 (b) -2 (c) 2 (d) 201

5 $(5a)^0 =$ .... , $a \neq 0$

(a) 5 (b) a (c) 5 a (d) 1

6 If $x - 2y = 3$, $x^2 - 4y^2 = 21$, then $x + 2y =$ ....

(a) 14 (b) 9 (c) 7 (d) 6

2 **Complete each of the following :**

1 $\frac{3}{4} =$ .... %

2 If $a = 7^x$, $b = 7^{-x}$, then $a \times b =$ ....

3 $2^{-3} \times 2^{-2} \div 4^{-3} =$ ....

4 The solution set of the equation : $x^2 - 6x = 0$ in $\mathbb{R}$ is ....

5 If a fair coin is tossed once , then the probability of appearance of a head = ...

3 **[a] Factorize each of the following completely :**

1 $36 - 60k + 25k^2$ 2 $x^4 + 64$

[b] Find in $\mathbb{R}$ the S.S. of the following equation : $x^2 + x = 6$

4 **[a] Simplify to the simplest form :** $\frac{(\sqrt{5})^{10} \times (-\sqrt{5})^{5}}{(\sqrt{5})^{11}}$

[b] A regular die is thrown once **Find the probability of the appearance a number is :**

1 Even. 2 Between 0 and 6 3 Prime.

5 **[a] Find in $\mathbb{R}$ the S.S. of the following equation :** $2^{n-3} = \frac{1}{4}$

[b] Simplify to the simplest form : $\frac{4^{x+1} \times 9^{2-x}}{6^{2x}}$, then calculate its value at $x = 1$

15 El-Menia Governorate



Answer the following questions :

1 **Complete the following :**

1 The solution set of the equation : $x^2 - 1 = 8$, where $x \in \mathbb{Z}^+$ is ....

2 If $3^{x-4} = 1$, then $x =$ ....

3 The S.S. of the equation : $x^2 - 25 = 0$ in $\mathbb{R}$ is ....

4 If $\left(\frac{2}{3}\right)^x = \frac{3}{2}$, then $x =$ ....

5 The volume of a cube of side length 3 cm. equals .... cm^3.

2 **Choose the correct answer :**

1 The S.S. of the equation : $x(x-2) = 0$ in $\mathbb{R}$ is ....

(a) $\{0\}$ (b) $\{2\}$ (c) $\{0, 2\}$ (d) $\{0, -2\}$

2 If $x^3 y^{-3} = 8$, then $\frac{x}{y} =$ ....

(a) $\frac{1}{512}$ (b) $\frac{1}{8}$ (c) $\frac{1}{2}$ (d) 2

3 The expression : $x^2 + k x + 36$ is a perfect square when k equals ....

(a) ± 6 (b) ± 8 (c) ± 12 (d) ± 18

4 $4^3 + 4^3 + 4^3 + 4^3 =$ ....

(a) 4^{12} (b) 16^{12} (c) 16^2 (d) 16^3

5 If the probability of success of a student is 0.75 , then the probability of his failure is ....

(a) 0.20 (b) 0.25 (c) 0.30 (d) 0.35

6 If $(x - 1)$ is one factor of expression : $x - 4x + 3$, then the other factor is ....

(a) $x + 3$ (b) $x + 1$ (c) $x - 3$ (d) $x - y$

3 [a] If $\frac{8^x \times 9^x}{18^x} = 64$ **find :** x

[b] **Find the S.S. of the equation in** $\mathbb{R}$ **:** $x^2 - 1 = 8$

4 **Factorize each of the following expresions :**

1 $ax - 7a + 3x - 21$
2 $x^3 + 8$
3 $x^2 - x - 6$
4 $4x^2 - 9$
5 $x^4 + 324$

5 [a] If $(3)^{x-2} = 9$, then find the value of : x

[b] A colored marble is drawn randomly out of a box containing 12 red marbles , 18 white marbles and 20 blue marbles.

Find the probability of selecting :

1 A white marble.
2 A yellow marble.
3 A red or blue marble.
4 A non red marble.



Schools Examinations on Algebra and Statistics



1 Cairo Governorate

East Nasr City Adminstration
Al Raya Language School





Answer the following questions :

1 Complete :

1. If $x + y = 4$, $x - y = 2$, then $x^2 - y^2 = \dots\dots$
2. A bag contain a number of similar balls , 4 of them are white and the rest is red , if the probability of drawing a white ball is $\frac{2}{3}$, then the number of red balls equals $\dots\dots$
3. If $3^x = 81$, then $x + 1 = \dots\dots$
4. The simplest form of $\left(\sqrt{5}\right)^{-4} = \dots\dots$
5. If $(x + 3)$ one factor of the expression : $x^2 + x - 6$, then the other factor is $\dots\dots$

2 Choose the correct answer from the given ones :

1. $4^5 + 4^5 + 4^5 + 4^5 = \dots\dots$
   (a) 4^{12} (b) 4^{20} (c) 4^{81} (d) 4^6
2. A man's age now is x years , then his age 7 years ago was $\dots\dots$ years.
   (a) $x - 7$ (b) $7x$ (c) $7 - x$ (d) $x + 7$
3. If the expression : $x^2 - 12x + k$ is a perfect square , then $k = \dots\dots$
   (a) 3 (b) 36 (c) 9 (d) 6
4. The S.S. of $x^2 + 4 = 0$ in $\mathbb{R}$ is $\dots\dots$
   (a) $\{0\}$ (b) $\varnothing$ (c) $\{0 , 1\}$ (d) $\{1\}$
5. If $a^3 b^{-3} = 8$, then $\frac{a}{b} = \dots\dots$
   (a) $\frac{1}{512}$ (b) $\frac{1}{8}$ (c) $\frac{1}{2}$ (d) 2
6. If $a \in \mathbb{R}^*$, m , n are two non negative integers , then $a^m \times a^{-n} = a^{\dots\dots}$
   (a) $m - n$ (b) $m + n$ (c) $m n$ (d) $n - m$

3 Factorize each of the following :

1. $x^3 + 8$
2. $x^2 - 5x + 6$
3. $3x - 21 + a x - 7a$
4. $9x^2 - 4$
5. ✻ $x^4 + 64$

4 **[a] Find in $\mathbb{R}$ the S.S. of the following equation : $x^3 - 8x^2 + 12x = 0$**

[b] 1 Find the positive real number which is if we add its square to three times it , the result will be 28

2 If $\left(\frac{2}{5}\right)^{2x+1} = \frac{8}{125}$, then find the value of x

5 **[a] 1 Simplify to the simplest form : $\frac{6^{2n} \times 4^n}{2^{4n} \times 3^{2n}}$**

2 If $x = 3$, $y = \sqrt{2}$, **find in the simplest form the value of : $\left(\frac{x}{y}\right)^{-2}$**

[b] Selecting randomly a card out of cards numbered from 1 to 20 , Find the probability of getting a card carries :

1 A perfect square number. 2 A prime number.

2 Cairo Governorate

Heliopolis Educational Zone



Answer the following questions :

1 **Choose the correct answer :**

1 If $x^2 + kx + 25$ is a perfect square , then k = ...

(a) 5 (b) 10 (c) ± 10 (d) ± 5

2 If $5^{x+2} = 1$, then x = ...

(a) 1 (b) − 2 (c) 2 (d) 5

3 If $x^2 - a = (x - 3)(x + 3)$, then a = ...

(a) 2 (b) − 2 (c) 9 (d) − 9

4 The half of the number 2^8 is = ...

(a) 2^4 (b) 2^7 (c) 4 (d) − 4

5 If $\left(\frac{2}{3}\right)^x = \frac{8}{27}$, then x = ...

(a) 2 (b) 1 (c) 8 (d) 3

6 If $x^3 + 8 = (x + 2)(x^2 + k + 4)$, then k = ...

(a) $-2x$ (b) $4x$ (c) $2x$ (d) $-4x$

2 **Complete the following :**

1 The S.S. of $x^2 + 9 = 0$ in $\mathbb{R}$ is ....

2 The multiplicative inverse of the number $\left(\sqrt{3}\right)^4$ is ....

3 If $(x - 4)$ is a factor of the expression : $x^2 - 5x + 4$, then the other factor is ....

4 The probability of any event A ∈ ....

5 $\left(\sqrt{5}\right)^3 \div 5\sqrt{5}$ = ...

3 **[a] Factorize each of the following :**

1 $a x + b x + 5a + 5b$ 2 $x^3 - 1$ 3 * $x^4 + 4$

[b] Find in ℝ the S.S. of the equation : $x^2 + 9x + 18 = 0$

4 **[a] If** $3^{x-1} = 27$ **, find the value of :** x

[b] Simplify to the simplest form : $\frac{(\sqrt{5})^7 \times (\sqrt{5})^3}{(\sqrt{5})^9 \times (\sqrt{2})^{-3}}$

5 **[a] If** $x = 3$, $y = \sqrt{3}$ **, find the value of :** $\left(\frac{y}{x}\right)^{-2}$

[b] Simplify the following to the simplest form : $\frac{4^{x} \times 6^{2x}}{2^{4x} \times 3^{2x}}$



3 Cairo Governorate

El Wailly Directorate School
Mostakbal G.D.L.4



Answer the following questions :

1 **Choose the correct answer :**

1 If the expression : $x^2 + kx + 36$ is a perfect square , then k = ...

(a) ± 6 (b) ± 8 (c) ± 12 (d) ± 18

2 If $x - y = 5$ and $x^2 + xy + y^2 = 7$, then $x^3 - y^3$ = ...

(a) 2 (b) 7 (c) 12 (d) 35

3 If $3^{x} = 2$, then $(27)^{x}$ = ...

(a) 8 (b) 9 (c) 27 (d) 54

4 If 2 is a solution for the equation : $x^2 - 5x + k = 0$, then k = ...

(a) – 3 (b) 3 (c) 6 (d) – 6

5 $3^4 + 3^4 + 3^4$ = ...

(a) 3^3 (b) 3^4 (c) 3^{12} (d) 3^5

6 $\sqrt{100 - (-6)^2}$ = ...

(a) 4 (b) ± 8 (c) 8 (d) 16

2 **Complete each of the following :**

1 $9x^2 - 3x = 3x(3x -$ ....$)$

2 If $3^{x-2} = 1$, then x = ...

3 If $x^2 - y^2 = 35$ and $x - y = 5$, then $x + y$ = ...

4 $\left(\frac{x}{y}\right)^{-3} = (\ldots\ldots\ldots\ldots)^3$

5 The S.S. of the equation : $x^2 + 4 = 0$ in $\mathbb{R}$ is ……………

3 **Factorize completely each of the following :**

1 $9x^2 - 16$

2 $x^3 - 125$

3 $2x^2 + 7x - 4$

4 $x^3 + x^2 + x + 1$

4 **[a] Find in $\mathbb{R}$ the S.S. of the equation :** $2x^3 = 18x$

[b] Simplify : $\frac{4^{x+1} \times 9^{2-x}}{6^{2x}}$, then find its value at : $x = 1$

5 [a] If $3^{x-4} = 27$ **, then find the value of :** x

[b] A rectangle whose area is 32 cm^2 and its length is twice its width find its length , width and perimeter.

4 Giza Governorate

National Institutes
Al-Horreya Language School



Answer the following questions :

1 **Choose the correct answer :**

1 The expression : $x^2 + kx + 36$ is a perfect square when k equals ……………

(a) ± 6 (b) ± 8 (c) ± 12 (d) ± 18

2 The solution set of the equation : $x^2 - x = 0$ in $\mathbb{R}$ is ……………

(a) {0} (b) {0 , 1} (c) ∅ (d) {1}

3 $(\sqrt{3} + \sqrt{2})(\sqrt{3} - \sqrt{2})$ is ……………

(a) 1 (b) $\sqrt{5}$ (c) $\sqrt{6}$ (d) 5

4 A bag contains 10 similar cards labeled from 1 to 10 , a card is drawn at random , then the probability that this card carries a number divisible by 5 is ……………

(a) zero (b) $\frac{1}{5}$ (c) $\frac{2}{5}$ (d) $\frac{1}{2}$

5 If $x + y = 3$ and $x^2 - xy + y^2 = 5$, then $x^3 + y^3 =$ ……………

(a) 15 (b) 25 (c) 8 (d) 7

6 The volume of a cube of side length 3 cm. equals ………… cm^3

(a) 12 (b) 9 (c) 27 (d) 81

2 **Complete :**

1 $1-\frac{1}{4}=$ .... %

2 The solution set of the equation : $x^2-1=8$ where $x\in\mathbb{Z}^+$ is ....

3 If $7^{x-1}=3^{x-1}$, then $x=$ ....

4 The probability of a certain event is ....

5 If $x+y=4$, $x-y=2$, then $x^2-y^2=$ ....

3 **Factorize :**

1 x^3-1

2 $4x^2-9$

3 $ax-7a+3x-21$

4 $2x^2-7x+3$

5 ✱ x^4+4y^4

4 **[a] Simplify to the simplest form :** $\frac{(\sqrt{2})^5\times(3)^{-2}}{3\times(\sqrt{2})^9}$

[b] Find the S.S. for the following equation where $x\in\mathbb{R}$: $x^2-8x+12=0$

5 **[a]** If $2^{x}=16$, $3^{x+y}=1$, **find the values of :** x , y

[b] A bag contains a number of similar balls some of them are red , 2 greens and 4 blues. If the probability of drawing a ball with green color is $\frac{1}{6}$, find the number of red balls.

5 Giza Governorate

6 October Directorate



Answer the following questions :

1 **Choose the correct answer :**

1 $(x-2)^2=$ ....

(a) x^2-4 (b) $(2+x)^2$ (c) x^2+4 (d) x^2-4x+4

2 $4^3+4^3+4^3+4^3=$ ....

(a) 4^3 (b) 4^4 (c) 4^{12} (d) 4^{81}

3 If $kx^2-12x+4$ is a perfect square , then k = ...

(a) – 6 (b) – 4 (c) – 2 (d) 9

4 If $\frac{a}{b}=1$, then $4a-4b=$ ....

(a) 8 (b) 4 (c) 1 (d) 0

5 If $x + y = 3$, $x^2 - xy + y^2 = 5$, then $x^3 + y^3 =$ ....

(a) 15 (b) 25 (c) 8 (d) 7

6 If $3^x = 2$, then $27^x =$ ....

(a) 9 (b) 4 (c) 8 (d) 1

2 Complete the following :

1 If $x^3 y^{-3} = 8$, then $\frac{y}{x} =$ ....

2 A bag contains 9 cards labeled by numbers from 1 to 9 , a card is drawn randomly , then the probability that this card carries an odd number = ...

3 The S.S. of the equation : $x^2 + 1 = 0$ in $\mathbb{R}$ is ....

4 If $\frac{2x}{5} = 6$, then $x - 5 =$ ....

5 $(a - 2)(2a - 3) =$ .... $- 7a +$ ....

3 Factorize each of the following :

1 $3x^2 - 48$

2 $x^2 - 7x + 10$

3 $x^3 + 2x^2 - 4x - 8$

4 $2x^3 - 16y^3$

4 [a] Find the S.S. in $\mathbb{R}$:

1 $3^{2n-5} = 1$

2 $\left(\frac{2}{3}\right)^{2n} = \frac{81}{16}$

[b] A bag contains cards numbered from 1 to 20 and card drawn randomly

Find the probability of :

1 Getting a number divisible by 4

2 Getting a number multiple of 7

5 [a] Find the real number which if we added its square to its three times , it becomes 28

[b] Simplify : $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$

6 Alexandria Governorate

Mid Educational Zone
Maths Supervision



Answer the following questions :

1 Complete each of the following :

1 The simplest form of : $(\sqrt{3})^3 \times (\sqrt{3})^5 =$ ....

2 If $x + y = 5$, $x - y = 3$, then $x^2 - y^2 =$ ....

3 If $x - 6 = 0$, then $x =$ ....

4 $y^3 -$ .... $= (y - 2)(y^2 +$ .... $+ 4)$

5 $\left(\sqrt{7}+\sqrt{6}\right)^8 \left(\sqrt{7}-\sqrt{6}\right)^8 =$ ....

2 Choose the correct answer :

1 The expression : $x^2 + 8x + a$ is a perfect square when a = ...

(a) -4 (b) 4 (c) 8 (d) 16

2 A die is thrown once , then the probability of appearance 7 on the upper face is ....

(a) $\frac{-5}{6}$ (b) $\frac{1}{6}$ (c) 0 (d) $\frac{5}{6}$

3 If $(x + 3)^{zero} = 1$, then $x \in$ ....

(a) $\mathbb{R} - \{3\}$ (b) $\mathbb{R} - \{-3\}$ (c) $\{3\}$ (d) $\mathbb{R}$

4 If the age of Kamal now is x years , then his age 3 years ago was .... years.

(a) $x + 3$ (b) $3x$ (c) $x - 3$ (d) $6x$

5 The multiplicative inverse of 1 is ....

(a) 0 (b) 1 (c) 2 (d) 3

6 $3^3 + 3^3 + 3^3 =$ ....

(a) 3^3 (b) 3^4 (c) 3^{12} (d) 3^{81}

3 [a] Factorize :

1 $9x^2 - 4$

2 $10y^2 - 7y - 12$

3 ✱ $4x^4 + 1$

[b] Find the solution set in $\mathbb{R}$ for : $2x^2 - 2x - 12 = 0$

4 [a] Find in the simplest form : $\frac{x^6 \times x^2}{x^3}$ where $x \neq 0$

[b] Factorize : $3x - 21 + ax - 7a$

5 [a] A numbered card is selected randomly from a set of similar cards numbered from 1 to 15

Find the probability of getting a card carries :

1 A prime number.

2 A number divisible by 3

[b] If $2^{x-2} = 32$, **then find the value of :** x

7 Alexandria Governorate

East Educational Zone
Math's Supervision



Answer the following questions :

1 Complete the following :

1. If $x : 49 = 2 : 7$, then $x =$ ....
2. If $2^x = 8$, then $x =$ ....
3. The value of the expression : $3^5 + \left(\sqrt{3}\right)^{10} - 2\,(3)^5 =$ ....
4. $6\,x^2 - 11\,x - 10 = (2\,x -$ .... $)($............... $+ 2)$
5. 1 , 4 , 9 , 16 , ... (in the same pattern)

2 Choose the correct answer from those given :

1. If $5\,x = 35$, then $2\,x + 1 =$ ....
   (a) 7 (b) 8 (c) 15 (d) 71
2. If $5^x = 4$, then $5^{x-1} =$ ....
   (a) 1.25 (b) 0.8 (c) 0.125 (d) 0.08
3. If $x^2 - y^2 = 16$, $y - x = 2$, then $x + y =$ ....
   (a) 4 (b) 8 (c) -8 (d) 2
4. A regular die is thrown and observed the upper face , then the probability of appearance a number divisible by 3 is ....
   (a) $\frac{1}{4}$ (b) $\frac{1}{3}$ (c) $\frac{1}{2}$ (d) $\frac{3}{4}$
5. If the expression : $x^2 + 14\,x + b$ is a perfect square , then $b =$ ....
   (a) 2 (b) 7 (c) 14 (d) 49
6. If $3^x + 3^x + 3^x = 1$, then $x =$ ....
   (a) -1 (b) 0 (c) $\frac{1}{3}$ (d) 1

3 [a] A bag contain a number of similar balls , some of them are red , 2 greens , 4 blues.
If the probability of drawing a ball with green color is $\frac{1}{6}$
Find the number of red balls.

[b] Factorize each of the following expression :

1. $2\,x^2 + 7\,x + 3$
2. $x^2 - 5\,x$

4 **[a] Find the S.S. for the following equation where $x \in \mathbb{R}$: $x^2 - 8\,x + 12 = 0$**

[b] Simplify to the simplest form : $\dfrac{\left(\sqrt{2}\right)^5 \times (3)^{-2}}{3 \times \left(\sqrt{2}\right)^9}$

5 [a] Find the dimensions of a rectangle whose length is 4 cm. more than its width and whose area is 21 cm^2

[b] If $\frac{8^x \times 9^x}{18^x} = 64$ find the value of 4^{-x}

8 El-Kalyoubia Governorate

Maths Supervision



Answer the following questions :

1 Choose the correct answer :

1. $\mathbb{Z} - \mathbb{Z}^- =$ ....
   (a) $\mathbb{Z}^+$ (b) $\mathbb{N}$ (c) $\varnothing$ (d) $\{0\}$
2. The volume of the cube of side length 3 cm. equals .... cm^3
   (a) 9 (b) 12 (c) 27 (d) 81
3. The expression : $x^2 + 4x + a$ is a perfect square when a = ...
   (a) 3 (b) 4 (c) 8 (d) 16
4. The S.S. of the equation : $x^2 - x = 0$ is .... in $\mathbb{R}$
   (a) $\{0\}$ (b) $\varnothing$ (c) $\{0, 1\}$ (d) $\{1\}$
5. If $(x - 1)$ is one factor of the expression : $x^2 - 4x + 3$, then the other factor is ....
   (a) $x + 3$ (b) $x + 1$ (c) $x - 3$ (d) $x - y$
6. If $\left(\frac{5}{3}\right)^x = \left(\frac{3}{5}\right)^2$, then $x =$ ....
   (a) -2 (b) 2 (c) $\frac{1}{2}$ (d) $\frac{-1}{2}$

2 Complete :

1. If $7^{x-1} = 3^{x-1}$, then $x =$ ....
2. A bag contains 9 cards labled by numbers from 1 to 9, a card is drawn randomly, then the probability that the card carries an odd number is ....
3. $a^{-4} + 1 = a^{-4}$ (.............. + ...) where $a \neq 0$
4. $1 - \frac{3}{4} =$ ....
5. $4^3 + 4^3 + 4^3 + 4^3 = 4^{\cdots\cdots}$

3 **[a] Factorize :**

1. $x^2 - y^2$
2. $y^3 + 8$

[b] Find the S.S. of the following equation in $\mathbb{R}$: $x^2 - x - 6 = 0$

4 **[a] Factorize :**

[1] $a x - 7a + 3x - 21$ [2] $x^2 - 5x$

[b] If $3^x = 27$, $4^{x+y} = 1$, **find the value of :** x , y

5 **[a] Find in the simplest form :** $\frac{4^{x+1} \times 9^{2-x}}{(6)^{2x}}$, then calculate the result when $x = 1$

[b] If one digit of the number 37450 chosen at random , find the probability that the chosen digit is an even number.

9 El-Monofia Governorate

Kwesna Educational Directorate
Mathematics Supervision



Answer the following questions : (Calculator is premitted)

1 **Choose the correct answer from those given :**

[1] $0.002 \times 0.05 =$ ....

(a) 10^{-5} (b) 10^{-4} (c) 10^4 (d) 10^5

[2] The expression : $(x - 2y)(x^2 + 2xy + 4y^2)$ equals ....

(a) $x^3 - 2y^3$ (b) $x^3 - 8y^3$ (c) $x^3 + 8y^3$ (d) $x^3 + 18y^3$

[3] The value of the expression : $5^{20} + 5^{21}$ equals ....

(a) 5×5^{40} (b) 5×5^{41} (c) 6×5^{20} (d) 6×5^{21}

[4] The value of the expression : $2^5 + \left(\sqrt{2}\right)^{10}$ equals ....

(a) 2^6 (b) 2^{10} (c) $\left(\sqrt{5}\right)^{15}$ (d) $\left(\sqrt{2}\right)^{20}$

[5] If the probability of choosing a boy from a class of 40 students is 0.375 , then the number of girls is ....

(a) 35 (b) 25 (c) 20 (d) 15

[6] The solution set of the equation : $(x - 1)^2 = 0$ in $\mathbb{R}$ is ....

(a) $\{-1\}$ (b) $\{1\}$ (c) $\{-1 , 1\}$ (d) $\{2\}$

2 **Complete :**

[1] The expression : $x^2 - 2x + k$ is perfect square when k = ...

[2] If $3^x \times 2^{-x} = 1.5$, then $x =$ ....

[3] If $a^2 + b^2 = 7$, $ab = 3$, then $(a - b)^2 =$ ....

[4] $x(y - z) + L(y - z) = (y - z)$ (...............)

[5] $\left(\frac{\sqrt{3}}{9}\right)^{-1} = \left(\sqrt{3}\right)^{.........}$

3 [a] An integer is added to its multiplicative inverse the result equals 2 Find the number.

[b] Factorize each of the following :

1) $3x^2 - 15x + 12$
2) $\frac{1}{3}x^3 - 9$
3) ✻ $x^4 + 9x^2 + 81$

4 [a] Simplify : $\frac{4^{x+1} \times 9^{2-x}}{(6)^{2x}}$, then calculate its value at $x = 1$

[b] If $x = \frac{\sqrt{3}}{2}$, $y = \frac{1}{\sqrt{3}} = z = \frac{\sqrt{2}}{2}$, **find the value :** $x^2 + (x z)^2 \times y^2$

5 [a] A set of cards numbered from 0 to 10 , if a card is drawn randomly **, find the probability of each :**

1) Drawing a card carries odd number.
2) Drawing a card carries a number divisible by 5

[b] Factorize each of the following :

1) $a x - 7a + 3x - 21$
2) $9x^2 - 25$



10 El-Gharbia Governorate

Official Languages Schools
The Central Maths Supervision



Answer the following questions :

1 Choose the correct answer :

1) If $x^2 - 2x - k = (x + 3)(x - 5)$, then k = ...

(a) – 2 (b) – 8 (c) 15 (d) 2

2) The expression : $x^2 + 14x + b$ is a perfect square , than b = ...

(a) 2 (b) 7 (c) 14 (d) 49

3) The solution set of the equation : $x^2 + 9 = 0$ in $\mathbb{R}$ is ....

(a) $\{3\}$ (b) $\{-3 , 3\}$ (c) $\{-3\}$ (d) $\varnothing$

4) If $3^{2+x} = 4^{x+2}$, then 7^{x+2} = ...

(a) 7 (b) – 7 (c) – 2 (d) 1

5) In a mixed school there are 320 students. If the probability that the ideal student is a boy equals 0.6 , then the number of girls of the school equals .... girls.

(a) 256 (b) 192 (c) 128 (d) 196

6) If $\frac{a}{b} = 1$, then $4a - 4b$ = ...

(a) 8 (b) 4 (c) 0 (d) 1

2 **Complete each of the following :**

1 The solution set of $\frac{x}{4} = \frac{25}{x}$ in $\mathbb{R}$ is ....

2 If $x = (\sqrt{5} - 2)^7$, $y = (\sqrt{5} + 2)^7$, then $x y =$ ....

3 If $y^3 - a = (y - 2)(y^2 + 2y + 4)$, then a = ...

4 If $(x + 1)$ is one of the factors of the expression : $5x^2 - 2x - 7$, then the other factor is ....

5 $1 - \frac{1}{4} =$ .... %

3 **Factorize each of the following expressions completely :**

1 $x^2 + 8x + 15$

2 $x^3 - 27$

3 $2x^2 + 7x + 3$

4 $a x - 7a + 3x - 21$

4 [a] If $\frac{8^x \times 9^x}{18^x} = 64$, **find the value of :** 4^{-x}

[b] Find the solution set of the following equation where $x \in \mathbb{R}$: $x^2 - 8x + 12 = 0$

5 [a] 1 **Simplify :** $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$

2 Find the rational number whose four times its square equals 81

[b] A box contains 3 red balls , 4 yellow balls and 5 green balls.
A ball is drawn randomly from the box. **Find the probability of the drawn ball is :**

1 Yellow 2 Green 3 Not red

11 El-Dakahlia Governorate

Directorate of Education
Maths Supervision



Answer the following questions :

1 **Choose the correct answer :**

1 If $x + y = 8$ and $x^2 - y^2 = 12$, then $x - y =$ ....

(a) $\frac{2}{3}$ (b) $\frac{3}{2}$ (c) 4 (d) 20

2 The solution set of the equation : $x^2 - 7 = 9$ in $\mathbb{R}$ is ....

(a) $\{4 , -4\}$ (b) $\{4\}$ (c) $\varnothing$ (d) $\{16\}$

3 $\frac{3^x \times 3^x \times 3^x}{3^x + 3^x + 3^x} = 1$, then $x =$ ....

(a) 2 (b) 3 (c) $\frac{1}{2}$ (d) $\frac{-1}{3}$

4 If $(x^2 - 10x + a)$ is a perfect square , then a = ...

(a) – 5 (b) 5 (c) 25 (d) ± 25

5 A cube of edge length = 6 cm. , then its volume = ... cm^3

(a) 12 (b) 24 (c) 36 (d) 216

6 If $2^x = 5$, then 8^x = ...

(a) 125 (b) 25 (c) 15 (d) 20

2 Complete :

1 If $7^{x+5} = 3^{x+5}$, then x = ...

2 $1 - \frac{2}{5}$ = ... %

3 x^3 – .... = $(x - 2)(x^2$ .... + 4)

4 If $x^{-2} + 1 = x^{-2}$ (.............. + ...)

5 The probability of a certain event = ...

3 Factorize completely each of the following :

1 $2x^2 - 5x + 3$

2 $x^3 + x^2 + 3x + 3$

3 $6x^2 - 24$

4 $8x^3 + 1$

4 **[a] Find the solution set in $\mathbb{R}$:** $x^2 = 9x - 14$

[b] Find the value of n such that : $\frac{9^{n+1} \times 8^n}{6^{2n+2}} = 16$

5 [a] If $3^x = 81$ and $4^{x+y} = 1$ **, then find the value of :** x , y

[b] A box contains a number of similar balls 8 of them are red balls and the others are white , if the probability of the chosen red ball is $\frac{2}{3}$

Find the number of white balls.

12 Ismailia Governorate

Directorate of Education
Math's Supervision



Answer the following questions :

1 Choose the correct answer :

1 The probability of impossible event = ...

(a) 1 (b) 0 (c) $\frac{1}{2}$ (d) Ø

2 If $3^{x-2} = 1$, then x = ...

(a) 0 (b) 1 (c) 2 (d) 3

3 $\{2, 3, 6\} \cap \{3, 4, 5\} = \ldots\ldots$

(a) $\{2\}$ (b) $\{4\}$ (c) $\{6\}$ (d) $\{3\}$

4 If $4x^2 + 12x + m$ is a perfect square , then m = ……

(a) 9 (b) 3 (c) 4 (d) 16

5 $3^x + 3^x + 3^x = 3^{\ldots\ldots}$

(a) $3x$ (b) x^3 (c) $x+1$ (d) x

6 half of $2^6 = \ldots\ldots$

(a) 2^3 (b) 2^5 (c) 2^{12} (d) 2^4

2 Complete :

1 If $4^x = 7$, then $4^{x+1} = \ldots\ldots$

2 $12 - 2 \times 4 \div (9 - 5) = \ldots\ldots$

3 $\left(\frac{3}{4}\right)^x = \frac{27}{64}$, then $x = \ldots\ldots$

4 The S.S. in $\mathbb{R}$ of : $x^2 + 4 = 0$ is ……

5 $x(a+b) - y(a+b) = (a+b)(\ldots\ldots)$

3 [a] Factorize each of the following :

1 $x^2 - 11x + 18$

2 $x^3 + 27$

3 ✱ $4x^4 + y^4$

[b] If $2^x = 32$ and $3^{y+1} = 27$, **find the value of :** $x - y$

4 [a] If $\frac{8^x \times 9^x}{(18)^x} = 64$, find the value of x , then find the value of 2^x

[b] Find the S.S. in $\mathbb{R}$ of : $x^2 + 4x - 12 = 0$

5 [a] Factorize :

1 $4x^2 - 9$

2 $5x + ay + 5y + ax$

[b] A box contains 5 red balls , 3 white balls and 3 blue balls. If a ball selected randomly **, find the probability of getting :**

1 A red ball

2 A red or a blue ball

3 Not a red ball



El-Beheira Governorate

Edko Directorate
Maths Supervision



Answer the following questions :

1 Choose the correct answer from the given ones :

1. $(x-2)^2 = \dots\dots$
   (a) x^2+4 (b) x^2-4 (c) x^2+4x+4 (d) x^2-4x+4
2. $5^x = 25$, then $x = \dots\dots$
   (a) 1 (b) 2 (c) 3 (d) 4
3. The S.S. of : $x^2+64=0$ in $\mathbb{R}$ is $\dots\dots$
   (a) $\{4\}$ (b) $\varnothing$ (c) $\{-4\}$ (d) $\{4, -4\}$
4. If $9^{x+1} = 2^{x+1}$, then x is $\dots\dots$
   (a) 1 (b) -1 (c) 0 (d) 2
5. $3^x \times 3^x \times 3^x = \dots\dots$
   (a) 3^{3x} (b) 3^{x+1} (c) 3^{x+3} (d) 9^{3x}
6. If the expression : $x^2 + ax + 25$ is perfect square , then a = $\dots\dots$
   (a) 5 (b) 10 (c) 8 (d) 18

2 Complete each of the following :

1. If $x+y=2$, $x-y=8$, then $x^2-y^2 = \dots\dots$
2. $x^3 - 27 = (\dots\dots - \dots\dots)(x^2+3x+9)$
3. If $6^{n-2} = 1$, then n = $\dots\dots$
4. Third the number 3^{20} is $\dots\dots$
5. The number $\left(\sqrt{2}\right)^{-2}$ in the simplest form is $\dots\dots$

3 [a] If simplify : $\dfrac{(4)^{x+1} \times (9)^{2-x}}{(6)^{2x}}$, then find the value answer when $x = 1$

[b] Find the S.S. in $\mathbb{Q}$: $x^2 - x = 12$

4 **[a] Factorize :**

1. $3x^2 + 7x + 2$
2. $ax - 7a + 3x - 21$

[b] If $3^x = 27$, $4^{x+y} = 1$, **find the value of :** x and y

5 [a] The length of rectangle more than its width by 4 cm. and its area 12 cm^2. , find the dimensions of the rectangle.

[b] A card is chosen randomly from ten cards numbered from 5 to 14 ,

What is the probability that the chosen card is :

1 An even number ? 2 A prime number ?



14 El-Menia Governorate

El-Menia Educational Directorate
Minia Kawmia Language School



Answer the following questions :

1 Complete the following :

1 The solution set of the equation : $x^2 - 1 = 8$, where $x \in \mathbb{Z}^+$ is ....

2 If $3^{x-4} = 1$, then $x =$ ....

3 The S.S. of the equation : $x^2 - 25 = 0$ in $\mathbb{R}$ is ....

4 If $\left(\frac{2}{3}\right)^x = \frac{3}{2}$, then $x =$ ....

5 The volume of a cube of side length 3 cm. equals .... cm^3

2 Choose the correct answer :

1 The S.S. of the equation : $x(x-2) = 0$ in $\mathbb{R}$ is ....

(a) $\{0\}$ (b) $\{2\}$ (c) $\{0 , 2\}$ (d) $\{0 , -2\}$

2 If $x^3 y^{-3} = 8$, then $\frac{x}{y} =$ ....

(a) $\frac{1}{512}$ (b) $\frac{1}{8}$ (c) $\frac{1}{2}$ (d) 2

3 The expression : $x^2 + kx + 36$ is a perfect square when k equals ....

(a) ± 6 (b) ± 8 (c) ± 12 (d) ± 18

4 $4^3 + 4^3 + 4^3 + 4^3 =$ ....

(a) 4^{12} (b) 16^{12} (c) 16^2 (d) 16^3

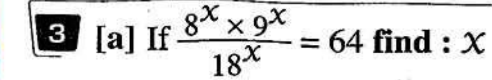
5 If the probability of success of a student is 0.75 , then the probability of his failure is ....

(a) 0.20 (b) 0.25 (c) 0.30 (d) 0.35

6 If $(x - 1)$ is one factor of expression : $x - 4x + 3$, then the other factor is ....

(a) $x + 3$ (b) $x + 1$ (c) $x - 3$ (d) $x - y$

3



[a] If $\frac{8^x \times 9^x}{18^x} = 64$ find : x

[b] Find the S.S. of the equation in $\mathbb{R}$: $x^2 - 1 = 8$

4 **Factorize each of the following expresions :**

1. $a x - 7a + 3x - 21$
2. $x^3 + 8$
3. $x^2 - x - 6$
4. $4x^2 - 9$
5. ✱ $x^4 + 324$

5 **[a]** If $(3)^{x-2} = 9$, then find the value of : x

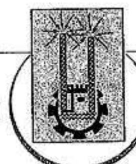
[b] A colored marble is drawn randomly out of a box containing 12 red marbles , 18 white marbles and 20 blue marbles.

Find the probability of selecting :

1. A white marble.
2. A yellow marble.
3. A red or blue marble.
4. A non red marble.

15 Aswan Governorate

Aswan Educational Directorate
Amr Farid distinct official Language School



Answer the following questions :

1 **Complete each of the following :**

1. $\left(\frac{-1}{\sqrt{2}}\right)^6 = \dots\dots$
2. If $x + y = 5$ and $x - y = 4$, then $x^2 - y^2 = \dots\dots$
3. A regular die is thrown once and observed the upper face , then the probability of appearance number divisible by 5 is ……
4. $x^3 - \dots\dots = (x - 2)(\dots\dots + 2x + 4)$
5. $\sqrt[3]{0.08 \times 0.1} = \dots\dots$

2 **Choose the correct answer from those given :**

1. The S.S. of the equation : $x^2 - x = 0$ in $\mathbb{R}$ is ……
   (a) $\{0\}$ (b) $\varnothing$ (c) $\{0 , 1\}$ (d) $\{1\}$
2. The probability of the certain events is ……
   (a) $\frac{1}{2}$ (b) 0 (c) $\varnothing$ (d) 1
3. If $5^x = 4$, then 5^{x-1} equals ……
   (a) 1.25 (b) 0.8 (c) 0.125 (d) 0.08
4. If $3^x = 5$ and $3^y = 4$, then $3^{x+y} = \dots\dots$
   (a) 15 (b) 20 (c) 9 (d) 1

5 The value of : $2^5 + (\sqrt{2})^{10}$ is ....

(a) 2^6 (b) 2^{10} (c) $(\sqrt{2})^{15}$ (d) $(\sqrt{2})^{20}$

6 $(-1)^9 + (-1)^8 =$ ....

(a) 2 (b) 0 (c) 1 (d) -1

3 [a] If $\left(\frac{2}{5}\right)^{2x-1} = \frac{8}{125}$, find : x

[b] Find the solution set of the following equation where $x \in \mathbb{R}$: $x^2 - 6x = 0$

4 **[a] Find in the simplest form the value of :** $\frac{(\sqrt{3})^{-5} \times (\sqrt{3})^{-4}}{(\sqrt{3})^{-10}}$

[b] A box contains a number of similar balls , 2 of them are green , 4 are blue and the rest are red , at choosing one randomly , and the probability of the drawn ball with green color is $\frac{1}{6}$, then find the number of red balls.

5 **Factorize each of the following expressions :**

1 $x^2 + 8x + 15$

2 $25x^2 - y^2$

3 $x^3 - 8$

4 $18y^2 - 12y + 2$

5 ✻ $81x^4 + 4z^4$

Some Schools Examinations on Algebra and Statistics

1 Cairo Governorate

East Nasr City Zone
Manaret Heliopolis School



Answer the following questions :

1 Complete each of the following :

(1) The probability of the impossible event is ....

(2) $a X + b y + b X + a y =$ ....

(3) Fifth the number 5^{20} is ....

(4) If $3^{X} = 5$, then $(27)^{X} =$ ....

(5) The solution set of the equation : $X^2 + 1 = 0$ in $\mathbb{R}$ is ....

---

2 Choose the correct answer :

(1) If the probability that a student succeeds in a subject is 0.8 , then the probability of his failure is ....

(a) 0 (b) 1 (c) 0.2 (d) 0.8

(2) If $6^{X} = 7$, then $6^{X+1} =$ ....

(a) 42 (b) $\frac{7}{6}$ (c) 1 (d) 6

(3) $4^3 + 4^3 + 4^3 + 4^3 =$ ....

(a) 4^{12} (b) 4^9 (c) 4^4 (d) 4^{81}

(4) The solution set of equation : $X^2 - 5X + 4 = 0$ in $\mathbb{R}$ is ....

(a) $\{1 , 4\}$ (b) $\{2 , -2\}$ (c) $\varnothing$ (d) $\{1\}$

(5) A die is thrown then the probability of appearance number 7 is ....

(a) 0 (b) 1 (c) $\frac{2}{5}$ (d) $\frac{1}{6}$

(6) * If $X^2 + kX + 25$ is a perfect square , then $k =$ ....

(a) 5 (b) 10 (c) ± 10 (d) ± 5

---

3 [a] Factorize each of the following completely :

(1) * $3a^2 + 7a + 2$ (2) $5\ell + 10m + a\ell + 2am$

[b] Find the value of the X in each of the following :

(1) $(X - 3)^7 = 128$ (2) $4^{2X-1} = 1024$ (3) $5^{X-7} = 1$

---

4 [a] Simplify each of the following :

(1) $\frac{(\sqrt{3})^{-4} \times (\sqrt{2})^{-5} \times (\sqrt{3})^{-3}}{(\sqrt{3})^{-9} \times (\sqrt{2})^{-7}}$ (2) $\left(\frac{2\sqrt{3}}{3\sqrt{2}}\right)^4$

[b] A bag contains balls labeled by the numbers from 1 to 15 if a ball is drawn at random

Find the probability that the drawn ball carries each of the following :

(1) An even number. (2) A number divisible by 3. (3) A prime number.

---

5 **[a]** In producing 600 electric lamps , if the probability of the defected lamps is 0.05 , then find the number of the good lamps and also the number if the defected.

[b] Find in ℝ the solution set of each of the following :

(1) $x^2 - 9 = 0$ (2) $x^2 = 5x$ (3) $3x = -x^2 - 2$

2 Cairo Governorate

Zietoun Educational Administration
Gomhouria language school



Answer the following questions :

1 **Choose the correct answer :**

(1) If $6^x = 7$, then $6^{x+1} = \ldots\ldots\ldots\ldots$

(a) 8 (b) 13 (c) 36 (d) 42

(2) If the expression : $a x^2 + 12x + 9$ is a perfect square , then a = ...

(a) 3 (b) 4 (c) 9 (d) 16

(3) If $xy = 3$, $(x + y)^2 = 16$, then $x^2 + y^2 = \ldots\ldots\ldots\ldots$

(a) 4 (b) 10 (c) 13 (d) 8

(4) If a regular die is tossed once then the probability of appearing the number 7 = ...

(a) $\frac{1}{7}$ (b) $\frac{1}{6}$ (c) 1 (d) 0

(5) $3^{zero} + 3^{-1} - \left(\frac{1}{\sqrt{3}}\right)^2 = \ldots\ldots\ldots\ldots$

(a) 3 (b) 1 (c) $\frac{1}{3}$ (d) 0

(6) ✻ If $x + y = 3$, $x^2 - xy + y^2 = 5$, then $x^3 + y^3 = \ldots\ldots\ldots\ldots$

(a) 15 (b) 25 (c) 8 (d) 7

---

2 **Complete each of the following :**

(1) If three times a number = 3^3 , then $\frac{2}{3}$ this number = ...

(2) If $x + y = 7$ and $a - 2b = 4$, then the numerical value of the expression :

$a(x + y) - 2b(x + y) = \ldots\ldots\ldots\ldots$

(3) If $\left(\frac{2}{3}\right)^x = \frac{27}{8}$, then $x = \ldots\ldots\ldots\ldots$

④ A class has 50 students (boys and girls) , if the probability of choosing a girl randomly is 0.6 , then the number of boys = ...

⑤ If $x^3 y^{-3} = 8$, then $\frac{y}{x} =$ ....

3 **[a] Factorize each of the following completely :**

① ✻ $9 - y^2$ ② $4x^4 + 81y^4$

[b] If $2^{x-2} = \left(\frac{1}{2\sqrt{2}}\right)^2$ **Find the value of :** x

4 **[a] Find in $\mathbb{R}$ the S.S. of the equation :** $3x^2 + 15x - 18 = 0$

[b] Simplify to the simplest form : $(3^{x-1} \times 2^{x+1}) \div 6^{x-1}$

5 [a] A positive real number , if its square is added to three times of it then the result equals 28 **Find this number.**

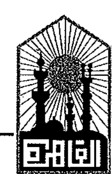
[b] A box has 15 regular balls , 3 of them are white , 9 of them are black , a ball is choosing randomly.

Find the probability of the drawn ball is :

① Black. ② Not white and not black.

3 Cairo Governorate

New Cairo Zone
Manor House Language School



Answer the following questions :

1 **Complete each of the following :**

① If $5^{x-2} = 1$, then $x =$ ....

② The S.S. of the equation : $x^2 - 16 = 0$ in $\mathbb{R}$ is ....

③ The number $(\sqrt{2})^{-4}$ in simplest form is ....

④ Bag contains 5 white balls , 2 black balls and 3 blue balls , if a ball was taken randomly , then the probability of this ball is black or white is ....

⑤ If $x = (\sqrt{5} - 2)^7$ and $y = (\sqrt{5} + 2)^7$, then $xy =$ ....

2 **Choose the correct answer :**

① If $(x - 2)^0 = 1$, then $x \neq$ ....

(a) 3 (b) 2 (c) 1 (d) –3

② If $5^x = 4$, then $5^{x-1} =$ ....

(a) 1.25 (b) 0.8 (c) 0.125 (d) 0.08

(3) If $X = \frac{\sqrt{8}}{\sqrt{2}}$, then $X^{-1} =$ ....

(a) 2 (b) – 2 (c) $\frac{1}{2}$ (d) $\frac{-1}{2}$

(4) The probability of occurrence of an event is 80% , then the probability of non-occurrence of this event is ....

(a) 0.2 (b) 0.3 (c) 0.4 (d) 0.8

(5) $\left(\frac{\sqrt{5}}{3}\right)^{-2} =$ ....

(a) $\frac{9}{5}$ (b) $-\frac{9}{5}$ (c) $-\frac{5}{9}$ (d) $\frac{5}{9}$

(6) ✱ If the expression : $X^2 + 7X + a$ can be factorized , then a may be equal to ....

(a) 8 (b) 10 (c) 18 (d) 49

---

3 **Find the S.S. of the following equations in ℝ :**

[a] (1) $X^2 - 7X + 10 = 0$ (2) $X^3 - 9X = 0$

[b] If $a = \sqrt{3}$, $b = \frac{1}{\sqrt{3}}$, **find the value of :** $a^4 + b^{-4}$

---

4 [a] A numbered card is selected randomly from a set of similar cards numbered from 1 to 30 , **Find the probability of getting a card that carries :**

(1) A number divisible by 4 (2) A number divisible by 6

(3) A number divisible by 4 and 6

[b] **Factorize the following :**

(1) $X^4 + 64y^4$ (2) $a^3 - ab^2 - a^2b + b^3$ (3) ✱ $8X^3 - 125$

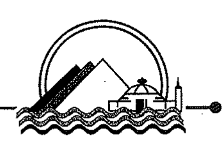
---

5 [a] If the length of a rectangle is more than its width by 5 cm. and if its area 36 cm. find its perimeter.

[b] If $\frac{9^X \times 8^X}{18^X} = 64$, **find the value of :** X

4 Giza Governorate

Dokki District
Modern Narmer language school



Answer the following questions :

1 **Complete each of the following :**

(1) If $X = 3$ is a solution of the equation : $X^2 + 2X + k = 0$, then k = ...

(2) The solution set of the equation : $X^2 + 4 = 0$ in ℝ is ....

(3) The quadratic equation : $(x + \cdots\cdots)(3x - 2) = 0$ is equivalent to $\cdots\cdots + \cdots\cdots - 10 = 0$

(4) If $3^{x-2} = 27$, then $x = \cdots\cdots\cdots\cdots$

(5) There are 21 boys and 15 girls in a classroom , if a student is chosen at random , then the probability that the student is a boy = ...

---

2 Choose the correct answer :

(1) The solution set in $\mathbb{R}$ of the equation : $(x - 1)^2 = 0$ is

(a) $\{0\}$ (b) $\{-1\}$ (c) $\{1, -1\}$ (d) $\{1\}$

(2) If $3^x + 3^x + 3^x = 1$, then $x = \cdots\cdots\cdots\cdots$

(a) -1 (b) 0 (c) 1 (d) 2

(3) 3^{-2} equals ....

(a) 9 (b) $\frac{1}{9}$ (c) $-\frac{1}{9}$ (d) -9

(4) $2^{12} \times 3^{12} = \cdots\cdots\cdots\cdots$

(a) 6^2 (b) 6^4 (c) 6^{12} (d) 6^{24}

(5) A die is thrown once , then the probability that 5 appears is ....

(a) $-\frac{5}{6}$ (b) zero (c) $\frac{1}{6}$ (d) $\frac{5}{6}$

(6) ✻ The expression : $x^2 + a x + 2$ can be factorized , then a = ...

(a) 1 (b) 2 (c) 3 (d) 4

---

3 [a] Solve in $\mathbb{R}$ the equations :

(1) $x^2 - x - 12 = 0$

(2) $x(x - 2) - 2(2 - x) = 0$

[b] The length of a rectangle is more than its width by 5 cm. If its area is 36 cm^2 **, then find its dimensions and its perimeter.**

---

4 [a] Simplify : $\frac{4^{x+1} \times 9^{2-x}}{6^{2x}}$, then find the value of the answer when $x = 2$

[b] If the sum of the square of a positive number and three times this number is 28 **, then find the value of this number.**

---

5 [a] Find the value of x if : $3^{2x-3} = 243$

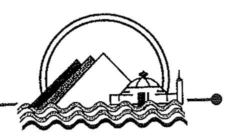
[b] A bag contains 20 balls numbered from 1 to 20 , if one ball is drawn at random **, then find the probability that :**

(1) The number is a multiple of 4

(2) The number is less than or equal 7

5 Giza Governorate

Omranea Direction
Baraem Misr Language School



Answer the following questions :

1 Choose the correct answer :

(1) The S.S. of the equation : $x^2 - 1 = 8$ in $\mathbb{R}$ is ....

(a) $\varnothing$ (b) $\{3\}$ (c) $\{-3\}$ (d) $\{-3, 3\}$

(2) If $6^x = 7$, then $6^{x+1} =$ ....

(a) 8 (b) 13 (c) 36 (d) 42

(3) If a die is thrown once , then the probability that the number 5 appears is ....

(a) $\frac{5}{6}$ (b) $\frac{1}{2}$ (c) $\frac{1}{6}$ (d) $\frac{0}{6}$

(4) If $7^{x-3} = 5^{x-3}$, then $x =$ ....

(a) 5 (b) 7 (c) 3 (d) 0

(5) $2^{12} \times 3^{12} =$ ....

(a) 6^2 (b) 6^4 (c) 6^{12} (d) 6^{24}

(6) * If the expression : $x^2 + 14x + b$ is a perfect square , then b = ...

(a) 2 (b) 7 (c) 14 (d) 49

2 Complete each of the following :

(1) $\left(\frac{3}{5}\right)^x = \frac{27}{125}$, then $x =$ ....

(2) The solution set of the equation : $x^2 + 9 = 0$ in $\mathbb{R}$ is ....

(3) If the probability that a student failed is 7% , then the probability that this student succeeded is ....

(4) If $3^x = 81$, then $x =$ ....

(5) The age of a man now x years, then his age 7 years ago is .... years.

3 [a] Factorize each of the following :

(1) * $8x^2 - 50$ (2) $x^4 + 4y^4$

[b] If a real number is added to its square the result will be 12 , find this number.

4 [a] Find in $\mathbb{Q}$ the solution set of :

(1) $x^2 - x = 12$ (2) $4x^2 - 25 = 0$

[b] If $\frac{8^x \times 9^x}{18^x} = 64$, **find :** x

5 **[a]** A box contains a similar balls , 8 white balls , 5 red balls and 7 black balls , if we choose a ball , **then find the probability that the ball is :**

① White. ② Black or red.

[b] Find the value of X if : $2^{X-2} = 16$

6 Alexandria Governorate

Eastern Educational Zone
Taymour English School



Answer the following questions :

1 **Complete the following :**

① If $a = \sqrt{3}$, $b = \sqrt{2}$, then the value of $\frac{a^4}{b^4} = \ldots\ldots$

② $\frac{(10)^2 \times (10)^{-7}}{(0.1)^2 \times 0.001} = \ldots\ldots$

③ A numbered card is selected at random from a set of similar cards numbered from 1 to 24 , the probability of getting a card carries a multiple of 4 is ……

④ $(9a^2 - 4b^2) = (3a - \ldots\ldots)(\ldots\ldots + 2b)$

⑤ $(X + 3y)^2 = X^2 + \ldots\ldots + 9y^2$

---

2 **Choose the correct answer :**

① If $(X + 3)$ is a factor of the expression : $X^2 + X - 6$, then the other factor is ……

(a) $(X - 2)$ (b) $(X - 3)$ (c) $(X + 2)$ (d) $(X + 6)$

② If $3^X = 27$, $4^{X+y} = 1$, then $y = \ldots\ldots$

(a) 0 (b) 3 (c) -3 (d) 1

③ The S.S. of the equation : $X^2 - 3 = 0$ in $\mathbb{R}$ is ……

(a) $\{3 , -3\}$ (b) $\{\sqrt{3}\}$ (c) 9 (d) $\{-\sqrt{3} , \sqrt{3}\}$

④ $(\sqrt{3} + \sqrt{2})^9 (\sqrt{3} - \sqrt{2})^9 = \ldots\ldots$

(a) 1 (b) $\sqrt{5}$ (c) $\sqrt{6}$ (d) 5

⑤ Which of the following may be equal the probability of an event ……

(a) -0.73 (b) 1.23 (c) 79 % (d) $\frac{4}{3}$

⑥ ✻ If $X^3 + 27 = (X + 3)(X^2 + k + 9)$, then $k = \ldots\ldots$

(a) $-6X$ (b) $-3X$ (c) $3X$ (d) $6X$

---

3 **[a] Simplify :** $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$

[b] Find the value of X : $\left(\frac{2}{5}\right)^{2X+1} = \frac{8}{125}$

4 Factorize each of the following :

(1) $(X+2)^3 - 4X - 8$

(2) $a^2 + 2ab + b^2 - c^2$

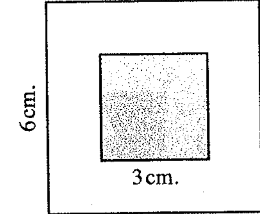
(3) ✻ $5a^2 - 18a + 16$

(4) $Xy + 5y + 7X + 35$

---

5 [a] Find the S.S. in $\mathbb{R}$: $2X^3 = 18X$

[b] A person shoot at a picture in the opposite figure then find the probability of hitting the shaded part.





7 Alexandria Governorate

Mid Zone
Supervision of Math

Answer the following questions :

1 Complete each of the following :

(1) The simplest form of the expression $2^3 \times 2^2 \div 4^3 =$ ....

(2) The solution set of the equation : $X^2 + 4 = 0$ in $\mathbb{R}$ is ....

(3) If $X - 5 = 0$, then $X =$ ....

(4) If $2^X = 3$, then $8^X =$ ....

(5) Subtracting $2X$ from $5X$ gives ....

---

2 Choose the correct answer :

(1) We can use factorizing by completing the square to factorize ....

(a) $X^2 - y^2$ (b) $X^3 - y^3$ (c) $X^3 + y^3$ (d) $X^4 + y^4$

(2) A die is thrown once , then the probability of appearance 5 on the upper face is ....

(a) $\frac{-5}{6}$ (b) $\frac{1}{6}$ (c) 0 (d) $\frac{5}{6}$

(3) If $\left(\frac{5}{3}\right)^X = \frac{27}{125}$, then $X =$ ....

(a) -5 (b) -3 (c) 3 (d) 5

(4) If the age of kamal now is X year , then his age after 5 years is ....

(a) $X + 5$ (b) $5X$ (c) $X - 5$ (d) $10X$

(5) The number has no multiplicative inverse is ....

(a) 0 (b) 1 (c) 2 (d) 3

(6) ✻ $X^2 - 4 =$ ....

(a) $4 - X^2$ (b) $(X-2)^2$ (c) $(X-2)(X+2)$ (d) $(X-4)^2$

3 **[a] Factorize :** (1) $x^4 + 4\ell^4$ (2) ✻ $\frac{1}{8}a^3 - 8b^3$

[b] Find the solution set in $\mathbb{R}$ for : $6x^2 - x = 22$

---

4 **[a] Find in the simplest form :** $\frac{(\sqrt{3})^5 \times (\sqrt{3})^3}{(\sqrt{3})^4}$

[b] Find the positive real number which if added to its square the result will be 12

---

5 **[a]** A numbered card is selected randomly from a set of similar cards numbered from 1 to 24 **, find the probability of getting a card carries :**

(1) Odd number. (2) A number divisible by 3

[b] If $3^{x-4} = 1$ **, then find the value of :** x

8 El-Kalyoubia Governorate

Supervision of Math



Answer the following questions :

1 **Choose the correct answer :**

(1) If $2^x = 5$, then $8^x =$ ....

(a) 40 (b) 10 (c) 16 (d) 125

(2) If $\frac{x-5}{x-7} \in \mathbb{Q}$, then $x \neq$ ....

(a) 5 (b) – 5 (c) 7 (d) –7

(3) The solution set of the equation : $x^2 - 5x - 6 = 0$ in $\mathbb{R}$ is ....

(a) $\{2 , 3\}$ (b) $\{2 , 4\}$ (c) $\{1 , -6\}$ (d) $\{-1 , 6\}$

(4) $4^3 + 4^3 + 4^3 + 4^3 =$ ....

(a) 4^3 (b) 4^4 (c) 4^{12} (d) 4^{81}

(5) If $(x - 5)^{zero} = 1$, then $x \in$ ....

(a) $\mathbb{R} - \{5\}$ (b) $\mathbb{R} - \{-5\}$ (c) $\{5\}$ (d) $\mathbb{R}$

(6) ✻ If $x^2 - y^2 = 12$, $x - y = 3$, then $x + y =$ ....

(a) 3 (b) 4 (c) 12 (d) 15

---

2 **Complete each of the following :**

(1) $x(y + 3) + z(y + 3) =$ (..............) (..............)

(2) 25 % of L.E. 320 is L.E. ....

(3) If a die is thrown once , then the probability of appearance of an even prime number is ....

(4) The solution set of the equation : $x^2 + 4 = 0$ in $\mathbb{N}$ is ....

(5) $3 (x^2 y^3)^{zero}$ = ... (Where $x y \neq 0$)

---

3 **[a] Simplify :** $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$

[b] Factorize : (1) $x y + 5 y + 3 x + 15$ (2) ✻ $4 x^2 - 20 x + 25$

---

4 **[a]** If $(\sqrt{3})^{n+2} = 9$ **, find the value of :** n

[b] Factorize : (1) $x^4 + 4 y^4$ (2) ✻ $y^2 - 7 y - 8$

---

5 **[a]** If a card is selected randomly of 30 cards in a box numbered from 1 to 30

, Find the probability of getting :

(1) A card carries a number divisible by 5

(2) A card carries a prime number less than 20

(3) A card carries an even number.

[b] If $x = 3$, $y = \sqrt{2}$ **, find in the simplest form the value of :**

(1) $x^{-2} y^{-4}$ (2) $\left(\frac{x}{y}\right)^{-3}$

9 El-Sharkia Governorate

Directorate of Education
Dep. of Governmental L.Schools



Answer the following questions :

1 **Complete each of the following :**

(1) If $3^{x-2} = 27$, then x = ...

(2) $\left(\frac{-2}{3}\right)^0$ = ...

(3) The S.S. of the equation : $x^2 + 9 = 0$ in $\mathbb{R}$, is ....

(4) If $6^x = 3$, then 6^{x+1} = ...

(5) If the probability that a student succeeds in a subject is 0.8 , then the probability of his failure is ....

---

2 **Choose the correct answer :**

(1) If $\frac{26}{x} + 1 = 14$, then x = ...

(a) 2 (b) 10 (c) 13 (d) 20

② If $3^{2n-5} = 1$, then $2n =$ ....

(a) 5 (b) −10 (c) 10 (d) zero

③ A die is thrown once , then the probability of appearance number 7 is ....

(a) $\frac{1}{7}$ (b) zero (c) $\frac{1}{6}$ (d) 1

④ The value of $(2)^{20} + (2)^{21} =$ ....

(a) 2^{41} (b) 4^{41} (c) 3×2^{20} (d) 3×2^{21}

⑤ If $(X + 3)^{zero} = 1$, then $X \in$ ....

(a) 3 (b) $\{-3\}$ (c) $\mathbb{R} - \{3\}$ (d) $\mathbb{R} - \{-3\}$

⑥ ✻ If $X^2 + kX - 21 = (X - 3)(X + 7)$, then $k =$ ....

(a) −4 (b) 4 (c) 8 (d) 20

---

3 **[a] Factorize each of the following expressions :**

① $X^3 + 2X^2 + 4X + 8$ ② ✻ $25a^4 - 1$

[b] If $\left(\frac{3}{5}\right)^{X-2} = \frac{27}{125}$ **Find the value of :** X

---

4 **[a] Find in $\mathbb{R}$ the S.S. of the equation :** $X(X + 4)(2X - 1) = 0$

[b] If $\frac{8^X \times 9^X}{18^X} = 64$ **Find the value of :** X

---

5 **[a]** Selecting randomly a card out of 40 similar cards in a box numbered from 1 to 40

Find the probability of getting a card carries :

① An even number. ② A number is divisible by 3

③ A prime number less than 20 ④ A number is not divisible by 10

10 El-Dakahlia Governorate

Maths Supervision



Answer the following questions :

1 **Complete each of the following :**

① If $3^{X-1} = 27$, then $X =$ ....

② If $(X - 5)^0 = 1$, then $X \in$ ....

③ $a + b = 2$ $(X + y) = 14$, then $a(X + y) + b(X + y) =$ ....

④ The probability of impossible event = ...

⑤ If the perimeter of square X cm. , then its area = ...

2 **Choose the correct answer :**

(1) If $6^{x} = 7$, then $6^{x+1} =$ ....

(a) 8 (b) 13 (c) 36 (d) 42

(2) If the product of multiplying four by a number equals 48 ,
then the third of this number = ...

(a) 4 (b) 8 (c) 12 (d) 16

(3) The value of $2^5 + \left(\sqrt{2}\right)^{10} =$ ....

(a) 2^6 (b) 2^{10} (c) $\left(\sqrt{2}\right)^{15}$ (d) $\left(\sqrt{2}\right)^{20}$

(4) The S.S. of the equation : $x^3 + 9x = 0$ in $\mathbb{R}$ is ....

(a) $\{0 , 3\}$ (b) $\{0\}$ (c) $\{0 , 3\}$ (d) $\{0 , 3 , -3\}$

(5) If $2^{x} = 5$, then $8^{x} =$ ....

(a) $\frac{5}{8}$ (b) 25 (c) 125 (d) $\frac{64}{125}$

(6) ✻ If $y^3 - a = (y - 2)(y^2 + 2y + 4)$, then a = ...

(a) 2 (b) 4 (c) 8 (d) – 8

---

3 **Factorize :**

(1) $x^4 + y^4 - 11x^2y^2$

(2) $9x^2 - 4a^2 + y^2 + 6xy$

(3) $3x^3 - 2x^2 + 12x - 8$

(4) ✻ $25x^2 - 30x + 9$

---

4 [a] If the length of a rectangle 5 cm. more than its width and its area 36 cm^2.
Find its perimeter.

[b] If $\left(\sqrt{\frac{2}{3}}\right)^{x} = \frac{4}{9}$ **Find the value of :** $\left(\frac{2}{3}\right)^{x-1}$

---

5 [a] **Prove that :** $\frac{(27)^{x-1} \times 8^{x}}{\left(2\sqrt{3}\right)^{2x} \times \left(3\sqrt{2}\right)^{2x}} = \frac{1}{27}$

[b] A team plays 30 matches in national league , its drawn probability is 0.3 and its win probability is 0.6 **Calculate the number of loss matches.**

11 Ismailia Governorate

Directorate of Education
Elmanar Language School

Answer the following questions :

1 **Complete each of the following :**

(1) $4a(x + y) - 3b(x + y) = (x + y)$ (.............. – ....)

(2) The S.S. of the equation : $x^2 + 3x = 0$ in $\mathbb{R}$ is ....

(3) If $3^{x} = 27$, then $x =$ ....

(4) The probability of impossible event is ....

(5) If the probability of absent pupils in a school is $\frac{2}{19}$, then the probability of present pupils is ....

2 Choose the correct answer :

(1) If $(x - 5)^{zero} = 1$, then $x \in$ ....

(a) $\mathbb{R} - \{5\}$ (b) $\mathbb{R} - \{-5\}$ (c) $\{5\}$ (d) $\mathbb{R}$

(2) The S.S. in $\mathbb{R}$ of the equation : $x^2 + 25 = 0$ is ....

(a) $\{5\}$ (b) $\{5 , -5\}$ (c) $\varnothing$ (d) $\{-5\}$

(3) If $5^{x} = 2$, then $5^{x+2} =$ ....

(a) 25 (b) 2 (c) 50 (d) 100

(4) A bag contains 20 balls , 8 out of them are white and the rest are black then the probability of drawn ball is black is ....

(a) 1 (b) 0.6 (c) 0 (d) $\frac{8}{20}$

(5) Which of the following can be probability of an event ....

(a) 1.2 (b) $\frac{4}{3}$ (c) -0.2 (d) 37 %

(6) * If $x^2 - a = (x - 3)(x + 3)$, then $a =$ ....

(a) 3 (b) -3 (c) 9 (d) -9

3 [a] Factorize : (1) $x^3 - 3x^2 + 6x - 18$ (2) * $3x^3 - 81$

[b] If $\left(\frac{2}{5}\right)^{2x-1} = \frac{8}{125}$ **Find the value of :** x

4 [a] A positive real number if you add its square to its three times the result will be 28 find the number.

[b] Find in $\mathbb{R}$ the S.S. of : $x^2 - 8x = -15$

5 [a] If a card is chosen randomly from 10 cards numbered from 1 to 10

, then the probability of chosen card is :

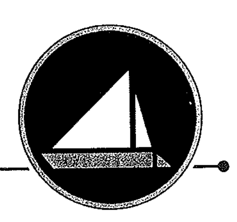
(1) Even number. (2) Divisible by 3

(3) Even prime.

[b] Prove that : $\frac{(27)^{x-1} \times 8^{x}}{\left(2\sqrt{2}\right)^{2x} \times \left(3\sqrt{3}\right)^{2x}} = \frac{1}{27}$

12 Damietta Governorate

Inspection of mathematics



Answer the following questions :

1 Choose the correct answer from those given :

(1) $3^{-2} =$ ....

(a) –9 (b) $\frac{1}{9}$ (c) $-\frac{1}{9}$ (d) 9

(2) $\sqrt{100-64} = 10 -$ ....

(a) 4 (b) 6 (c) 8 (d) – 6

(3) If a coin thrown once , then the probability of appearing tail = ...

(a) 1 (b) 0.3 (c) 0.5 (d) 0

(4) The solution set of the equation : $x^2 + 9 = 0$ in $\mathbb{R}$ is ....

(a) $\{3\}$ (b) $\{-3\}$ (c) $\varnothing$ (d) $\{3 , -3\}$

(5) $4^3 + 4^3 + 4^3 + 4^3 =$ ....

(a) 4^3 (b) 4^4 (c) 4^{12} (d) 4^{81}

(6) ✻ The expression : $a x^2 - 40 x + 25$ is a perfect square when a = ...

(a) 2 (b) 4 (c) 9 (d) 16

---

2 Complete each of the following :

(1) If the probability that a pupil succeed is 0.8 , then probability of his failure = ...

(2) If $7^x = 1$, then $x =$ ....

(3) $2 \times 6 - 8 \div 4 =$ ....

(4) If $2^x = 5$, then $2^{-x} =$ ....

(5) If $x - y = 3$ and $x + y = 4$, then $x^2 - y^2 =$ ....

---

3 [a] Simplify : $\frac{(\sqrt{3})^8 \times (\sqrt{3})^{-14}}{(\sqrt{3})^{-4}}$

[b] Find the solution set of the following equation in $\mathbb{R}$: $x^2 - 8x = -15$

---

4 [a] Factorize each of the following expressions :

(1) ✻ $x^2 - 4y^2$ (2) $x^4 + 4y^4$

[b] Find the solution set of the following equation in $\mathbb{R}$: $3^{x-4} = 9$

5 **[a] If $a = \sqrt{2}$, $b = \sqrt{3}$, find the numerical value of :** $\frac{b^4 - a^4}{b^2 + a^2}$

[b] A box contains 5 white , 2 red , 3 green balls , a ball is drawn randomly from the box

Calculate the probabilities of the following events :

① The ball is white. ② The ball yellow. ③ The ball is not red.

13 El-Beheira Governorate

General Maths Supervision



Answer the following questions :

1 **Choose the correct answer :**

① If four times a number is 48 , then one third of this number equals ....

(a) 4 (b) 8 (c) 12 (d) 16

② $4^3 + 4^3 + 4^3 + 4^3 =$ ....

(a) 4^3 (b) 4^4 (c) 4^{12} (d) 4^{81}

③ If $6^X = 7$, then $6^{X+1} =$ ....

(a) 8 (b) 13 (c) 36 (d) 42

④ If 2 is a solution for the equation : $X^2 - 5X + a = 0$, then a = ...

(a) – 3 (b) – 6 (c) 6 (d) 3

⑤ If $X(X-2)^2 = 0$, then $X \in$ ....

(a) $\{2\}$ (b) $\{0 , -2\}$ (c) $\{0\}$ (d) $\{0 , 2\}$

⑥ ✱ The expression : $X^2 - 3X + c$ can be factorized , then c can be equal to ....

(a) 1 (b) 2 (c) 4 (d) 6

2 **Complete each of the following :**

① The simplest form of the expression : $2^{zero} + 2^{-1} - \left(\frac{-1}{\sqrt{2}}\right)^2 =$ ....

② If $X + y = 5$, $a - 2b = 4$, then $a(X + y) - 2b(X + y) =$ ....

③ If the age of Zyad now is X year , then his age before 3 years was .... years.

④ If $X = \left(\sqrt{2} + 3\right)^5$, $y = \left(\sqrt{2} + 3\right)^{-5}$, then $X y =$ ....

⑤ A die is thrown once , then the probability of appearance odd prime number is ....

3 **[a] Find the S.S. of the following equation in $\mathbb{R}$:** $(X - 3)(X + 1) = 5$

[b] Find the positive real number if we add its square to its three times the result will be 28

4 [a] If $\left(\frac{2}{3}\right)^{x-4} = 2\frac{1}{4}$, then find the value of : x

[b] Simplify to the simplest form : $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$

---

3 [a] Factorize each of the following :

(1) $x^3 - x^2 + x - 1$

(2) * $x^2 - 5xy - 24y^2$

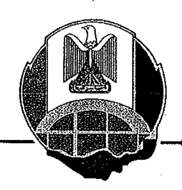
[b] A team plays 30 matches in a general league , its draw probability is 0.3 and its win probability is 0.6

Find : (1) The expected number of draw matches.

(2) The expected number of lose matches.

14 El-Fayoum Governorate

Directorate of Education
Supervision of Mathematics



Answer the following questions :

1 Choose the correct answer :

(1) If $\frac{a}{b} = 1$, then $4a - 4b =$ ....

(a) 8 (b) 4 (c) 1 (d) 0

(2) If the probability that a pupil succeeds is 0.7 , then the probability of his failure is ....

(a) 0.7 (b) 0.07 (c) 0.3 (d) 0.03

(3) If the age of Ahmed now is x years , then the square of his age is .... years.

(a) x^2 (b) $2x$ (c) $2x^2$ (d) $x + 2$

(4) $(-1)^3 + (-1)^5 =$ ....

(a) 0 (b) -2 (c) 2 (d) 201

(5) $(5a)^0 =$ .... , $a \neq 0$

(a) 5 (b) a (c) 5 a (d) 1

(6) * If $x - 2y = 3$, $x^2 - 4y^2 = 21$, then $x + 2y =$ ....

(a) 14 (b) 9 (c) 7 (d) 6

---

2 Complete each of the following :

(1) $\frac{3}{4} =$ .... %

(2) If $a = 7^x$, $b = 7^{-x}$, then $a \times b =$ ....

(3) $2^{-3} \times 2^{-2} \div 4^{-3} = \dots\dots\dots$

(4) The solution set of the equation : $x^2 - 6x = 0$ in $\mathbb{R}$ is $\dots\dots\dots$

(5) If a fair coin is tossed once , then the probability of appearance of a head = $\dots\dots\dots$

---

3 **[a] Factorize each of the following completely :**

(1) $36 - 60k + 25k^2$ (2) $x^4 + 64$

[b] Find in $\mathbb{R}$ the S.S. of the following equation : $x^2 + x = 6$

---

4 **[a] Simplify to the simplest form :** $\frac{(\sqrt{5})^{10} \times (-\sqrt{5})^5}{(\sqrt{5})^{11}}$

[b] A regular die is thrown once **Find the probability of the appearance a number :**

(1) Even. (2) Between 0 and 6 (3) Prime.

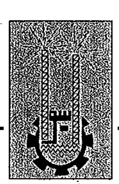
---

5 **[a] Find in $\mathbb{R}$ the S.S. of the following equation :** $2^{n-3} = \frac{1}{4}$

[b] Simplify to the simplest form : $\frac{4^{x+1} \times 9^{2-x}}{6^{2x}}$, then calculate its value at $x = 1$

15 Aswan Governorate

Aswan Educational Directorate
M.M. Yackoub Language Experimental school



Answer the following questions :

1 **Complete each of the following :**

(1) If $a(x + y) - b(x + y) = 15$ and $x + y = 5$, then $a - b = \dots\dots\dots$

(2) The multiplicative inverse of $\left(-\frac{2}{3}\right)^3$ is $\dots\dots\dots$

(3) $\frac{3}{5} + \frac{2}{5} = \dots\dots\dots \%$

(4) If $3^{x-2} = 1$, then $x = \dots\dots\dots$

(5) $x^2 - x = x(\dots\dots\dots)$

---

2 **Choose the correct answer :**

(1) The S.S. of the inequality $x \le 0$ in $\mathbb{N}$ is $\dots\dots\dots$

(a) $\{0\}$ (b) $\{-1\}$ (c) $\varnothing$ (d) $\mathbb{N}$

(2) $\left(\frac{\sqrt{5}}{3}\right)^{-2} = \dots\dots\dots$

(a) $\frac{-9}{5}$ (b) $\frac{-5}{9}$ (c) $\frac{5}{9}$ (d) $\frac{9}{5}$

(3) If $x^3 y^{-3} = 8$, then $\frac{y}{x} = \dots\dots$

(a) $\frac{1}{512}$ (b) $\frac{1}{8}$ (c) $\frac{1}{2}$ (d) 2

(4) The S.S. of the equation : $x(x-2) = 0$ in $\mathbb{R}$ is ....

(a) $\{0\}$ (b) $\{2\}$ (c) $\{0, 2\}$ (d) $\{0, -2\}$

(5) If the probability that a student succeeds in a subject is 80%

, then the probability of his failure is ....

(a) 0.08 (b) 0.02 (c) 0.2 (d) 0.8

(6) ✱ If the expression : $x^2 + 14x + b$ is a perfect square , then b = ...

(a) 0 (b) 49 (c) ± 9 (d) 7

---

3 [a] If : $\frac{8^x \times 9^x}{(18)^x} = 64$, **find the value of :** $(4)^{-x}$

[b] Factorize : (1) $9x^2 - 3x$ (2) ✱ $-9x^2 + 25$

---

4 [a] **A regular die is drawn once , find the probability of the following events :**

(1) Appearance a number divisible by 7

(2) Appearance a prime number ≤ 4

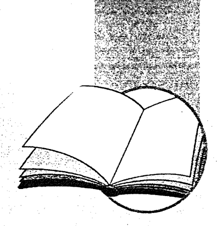
[b] Find in $\mathbb{R}$ the S.S. of the equation : $x(x-2) - 3(2-x) = 0$

---

5 [a] **Factorize :**

(1) $a x - 7a + 3x - 21$ (2) ✱ $3x^2 + 7y - 6$

[b] If $3^x = 27$, $4^{x+y} = 1$, **find the value of each of x and y**



1 Cairo Governorate

Ain Shams directorate



Answer the following questions :

1 Complete :

(1) The simplest form of $\left(\frac{3}{5}\right)^{-2}$ is ....

(2) If $2^{X} + 2^{X} = 1$, then $X =$ ....

(3) The S.S. of : $X^2 + 9 = 0$ in $\mathbb{R}$ is ....

(4) A die is thrown once , then the probability of appearance of an odd prim number is ....

(5) If $X^2 - y^2 = 14$, $X - y = 2$, then $X + y =$ ....

---

2 Choose the correct answer :

(1) One third of 3^{15} is ....

(a) 3^5 (b) 9^{15} (c) 9^5 (d) 3^{14}

(2) The S.S. of : $X(X - 2) = 0$, in $\mathbb{R}$ is ....

(a) $\{0\}$ (b) $\{2\}$ (c) $\{0 , 2\}$ (d) $\{0 , -2\}$

(3) If -2 is a solution for the equation : $X^2 - 3X = k$, then $k =$ ....

(a) -10 (b) ± 10 (c) -2 (d) 10

(4) If $X^2 + kX + 36$ is a perfect square trinomial , then $k =$ ....

(a) 12 (b) -12 (c) 0 (d) ± 12

(5) $3^5 \times \left(\sqrt{3}\right)^{10} =$ ....

(a) 3^6 (b) 3^{10} (c) $\left(\sqrt{3}\right)^{15}$ (d) $\left(\sqrt{3}\right)^2$

---

3 [a] Find in $\mathbb{R}$ the S.S. of : $2X^3 = 8X$

[b] Simplify : $\frac{4^{n+1} \times 9^{2-n}}{6^{2n}}$ **, then find it value at :** $n = 1$

---

4 Factorize each of the following completely :

(1) $L^4 + 4m^4$

(2) $aX + bX + ay + by$

(3) $\frac{1}{3}L^3 + 9$

(4) $7a^4 + 23a^2b - 30b^2$

5 **[a]** A rectangle its area is 14 cm^2 and its length is 5 cm. more than its width.

Find its perimeter.

[b] A numbered card is selected randomly from a set of similar cards numbered from 1 to 30

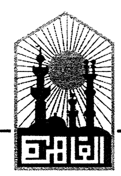
Find the probability of getting a card carries :

(1) A multiple of 6 (2) A number is divisible by 25

(3) A positive integer less than 30

2 Cairo Governorate

Rod El-Farag Educational Zone
St. Mary's School



Answer the following questions :

1 **Choose the correct answer :**

(1) The S.S. of the equation : $x^2 - 1 = 8$ in $\mathbb{R}$ is ....

(a) $\varnothing$ (b) $\{3\}$ (c) $\{-3\}$ (d) $\{-3 , 3\}$

(2) If $6^x = 7$, then $6^{x+1} =$ ....

(a) 8 (b) 13 (c) 36 (d) 42

(3) Let $x^2 + kx + 25$ be a perfect square , then k = ...

(a) 5 (b) 10 (c) ± 5 (d) ± 10

(4) The value of the expression : $3^5 + (\sqrt{3})^{10} - 2(3)^5 =$ ....

(a) zero (b) 3^5 (c) $(\sqrt{3})^5$ (d) $2(3)^5$

(5) If a die is thrown once , then the probability of appearance 5 on the upper face is ....

(a) $\frac{-5}{6}$ (b) zero (c) $\frac{1}{6}$ (d) $\frac{5}{6}$

2 **Complete :**

(1) If $2^x = 32$, then $x =$ ....

(2) $4^y + 4^y + 4^y + 4^y = 1$, then y = ...

(3) If $5^{x-3} = 1$, then $x =$ ....

(4) $ax + bx + ay + by = (a + b)$ (.......... + ...)

(5) If $x = (\sqrt{5} + 6)^9$, $y = (\sqrt{5} + 6)^{-9}$, then $xy =$ ....

3 **[a] Factorize :** $3\,a\,x - a - 6\,b\,x + 2\,b$

[b] Factorize : $x^4 + x^2 y^2 + 25\,y^4$

4 **[a] Find in $\mathbb{R}$ the S.S. of the equation :** $\left(\frac{5}{3}\right)^{x+2} = \frac{27}{125}$

[b] The ratio between two positive numbers is 2 : 3 and their product is more than twice the greater by 12 , find the two numbers.

5 **[a] Prove that :** $\frac{(27)^{x-1} \times (8)^{x}}{\left(2\sqrt{2}\right)^{2x} \times \left(3\sqrt{3}\right)^{2x}} = \frac{1}{27}$

[b] A bag contains balls labeled by the numbers from 1 to 24 , if a ball is drawn at random.

Find the probability of each of the following :

(1) The drawn ball carries a number divisible by 5

(2) The drawn ball carries a perfect square number.

Additional question

[a] Choose the correct answer :

(1) If $x^3 - y^3 = 24$, $x^2 + x\,y + y^2 = 8$, then $x - y =$ ....

(a) 4 (b) 6 (c) 3 (d) 12

(2) If $(x + 8)$ is a factor of the expression : $x^2 + 6\,x - 16$, then the other factor is ....

(a) $x - 2$ (b) $x - 4$ (c) $x + 2$ (d) $x + 4$

[b] Factorize each of the following :

(1) $x^2 - 5\,x - 36$ (2) $4\,x^2 - 25\,y^2$

3 Cairo Governorate

East Nasr City Educational Zone
Mathematics Inspection



Answer the following questions :

1 **Choose the correct answer from the given ones :**

(1) $(x - 2)(x^2 + 2\,x + 4) =$ ....

(a) $x^3 + 8$ (b) $x^3 - 8$ (c) $x^3 + 4$ (d) $x^3 + 2$

(2) If a die is thrown once , then the probability that the number 5 appears is ....

(a) $\frac{5}{6}$ (b) $\frac{1}{2}$ (c) $\frac{1}{6}$ (d) $\frac{0}{6}$

(3) If $7^{x-3} = 5^{x-3}$, then $x =$ ....

(a) 5 (b) 7 (c) 3 (d) 0

(4) $4 \times 15 \div 12 - 5 =$ ....

(a) -2 (b) 0 (c) 2 (d) 1

(5) $x^4 + 4$ can be factorize by completing square by adding ....

(a) $4x$ (b) $-x^2$ (c) $\pm 4x^2$ (d) $-2x^2$

2 Complete :

(1) $\left(\frac{3}{5}\right)^x = \frac{27}{125}$, then $x =$ ....

(2) The solution set of the equation : $x^2 + 9 = 0$ in $\mathbb{R}$ is ....

(3) If the probability that a student failed is 7 % , then the probability that this student succeeded is ....

(4) If $3^x = 81$, then $x =$..............

(5) If $a^2 + 2ab + b^2 = 25$, then $(a + b) =$ ....

3 [a] Factorize :

(1) $ax + bx + ay + by$ (2) $4x^4 + 1$

[b] Find in $\mathbb{Q}$ the solution set of :

(1) $(x^2 + 3)(x^3 + 1) = 0$ (2) $4x^2 - 25 = 0$

4 [a] If $\frac{8^x \times 9^x}{18^x} = 64$ **, find :** x

[b] A rectangle its length exceeds its width by 5 cm. and its area is 14 cm^2. Find its dimensions.

5 [a] A box contains a similar balls , 8 white balls , 5 red balls and 7 black balls , if we choose a ball , then find the probability that the ball is :

(1) White. (2) Black or red.

[b] A rational number , if subtracted from it double its multiplicative inverse the result equals one. Find this number.

Additional questions

[a] Complete each of the following :

(1) $5x^2 + x - 6 = (\cdots\cdots\cdots + \cdots\cdots\cdots)(x - \cdots\cdots\cdots)$

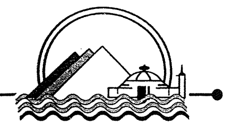
(2) The expression : $x^2 - kx + 4$ is a perfect square , if k = ……………

[b] Factorize each of the following :

(1) $x^2 + 7x + 12$ (2) $6x^2 - 7x - 3$

4 Giza Governorate

Omrania Directorate
ELSadat Governmental language School



Answer the following questions :

1 Complete each of the following :

(1) The simplest form of $\left(\frac{2}{3}\right)^{-2}$ is ……………

(2) The probability of the impossible event = ……………

(3) If $2^x = 5$, then 2^{x+1} = ……………

(4) The age of a man now x years , then his age 7 years ago is …………… years.

(5) $x(a+b) + y(a+b) = (a+b)(\cdots\cdots\cdots)$

---

2 Choose the correct answer :

(1) The solution set of the equation : $x^2 + 25 = 0$ in $\mathbb{R}$ is ……………

(a) $\{5, -5\}$ (b) $\{5\}$ (c) $\{-5\}$ (d) $\varnothing$

(2) $4^3 + 4^3 + 4^3 + 4^3$ = ……………

(a) 4^3 (b) 4^4 (c) 4^{12} (d) 4^{81}

(3) If a die is thrown once , then the probability of appearance number 7 is ……………

(a) zero (b) 0.7 (c) 0.6 (d) 1

(4) $(5^2)^3$ = ……………

(a) 5^{23} (b) 5^5 (c) 5^6 (d) 5

(5) If $(3)^{x+4} = 1$, then x = ……………

(a) 4 (b) – 4 (c) 5 (d) 3

3 **Factorize each of the following :**

(1) $aX - 4a + 3X - 12$ (2) $X^4 + 4$

4 [a] **Find in $\mathbb{R}$ the S.S. if the following equation :** $X^2 - 5X + 6 = 0$

[b] **Simplify :** $\frac{2^X \times 4^{X+1}}{8^X}$

5 [a] **Find the value of X if :** $2^{X-2} = 16$

[b] A box contains 3 red balls , 4 yellow balls and 5 green balls.

A ball is drawn randomly from the box.

Find the probability of the drawn ball is :

(1) Yellow. (2) Green. (3) Not red.

Additional question

[a] **Complete the following :**

(1) If $X^2 + aX - 13 = (X + 1)(X - 13)$, then a = ...

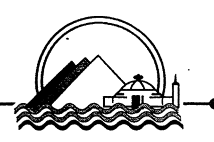
(2) If $k \in \mathbb{Z}$, $X^2 + kX - 3$ can be factorized , then k = ...

[b] The area of a rectangle is $(X^2 + 8X + 15)$ cm^2 and its width is $(X + 3)$ cm.

Find its length in terms of X , then find its perimeter in terms of X

5 Giza Governorate

Dokki District
Modern Narmer Language School



Answer the following questions :

1 **Complete the following :**

(1) If $a(X + y) - b(X + y) = 15$, $X + y = 5$, then a – b = ...

(2) If $X^2 - y^2 = 35$, $X - y = 7$, then $X + y$ = ...

(3) The number $\left(\sqrt{2}\right)^{-3}$ in the simplest form is ....

(4) If $3^{X-2} = 9$, then X = ...

(5) A bag contains 10 cards numbered from 1 to 10 , the probability of choosing a card that carries a prime number is ....

2 Choose the correct answer :

(1) The expression : $x (y + 3) + z (y + 3) =$ ....

(a) $x + y + z + 6$ (b) $(x + z) (y + 3)$ (c) $(x + z) (y + 3)^2$ (d) $(x + z) \times 2 (y + 3)$

(2) If $3^x + 3^x + 3^x = 1$, then $x =$ ....

(a) -1 (b) 0 (c) 1 (d) 2

(3) If $3^x = 5$, then $(27)^x =$ ....

(a) 9 (b) 25 (c) 125 (d) 729

(4) $2^{12} \times 3^{12} =$ ....

(a) 6^2 (b) 6^4 (c) 6^{12} (d) 6^{24}

(5) If a die is thrown once , then the probability that 5 appears is ....

(a) $-\frac{5}{6}$ (b) zero (c) $\frac{1}{6}$ (d) $\frac{5}{6}$

---

3 [a] Factorize completely :

(1) $L x - 7 L + 3 x - 21$ (2) $x^4 - x^2 - 5 x + 5$

[b] Using factorization to find the value of : $36^2 - 36 \times 16$

---

4 [a] Simplify : $\frac{4^m \times 6^{2m}}{2^{4m} \times 3^{2m}}$

[b] If a number x is decreased by twice its multiplicative inverse , the result is 1 **Find :** x

---

5 [a] Find the value of x if : $3^{2x - 3} = 243$

[b] A bag contains 20 balls numbered from 1 to 20 , if one ball is drawn at random **, then find the probability that :**

(1) The number is a multiple of 4 (2) The number is less than or equal 7

Additional question

[a] Choose the correct answer :

(1) If $x^3 + y^3 = 9$, $2x + 2y = 6$, then $x^2 - xy + y^2 =$ ....

(a) 3 (b) 9 (c) 27 (d) 54

(2) The number which can be added to the expression : $2x^2 + 5x - 10$ to be factorized is ....

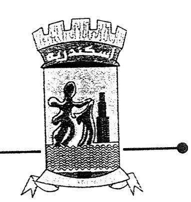
(a) -1 (b) -2 (c) -3 (d) -4

[b] Factorize each of the following :

(1) $2 (x^2 - 2) - 7 x$ (2) $x^2 - 25$

6 Alexandria Governorate

Middle Educational Zone
Mathematics Inspection



Answer the following questions :

1 Choose the correct answer :

(1) The S.S. of the equation : $x(x-5)=0$ in $\mathbb{R}$ is ....

(a) $\{0\}$ (b) $\{5\}$ (c) $\{0, 5\}$ (d) $\{0, -5\}$

(2) If $5^{x-4} = 3^{x-4}$, then $x =$ ....

(a) 4 (b) – 4 (c) zero (d) 35

(3) The probability of a certain event = ...

(a) zero (b) 1 (c) – 1 (d) – 2

(4) If $\left(\frac{3}{5}\right)^x = \frac{27}{125}$, then $x =$ ....

(a) – 3 (b) 3 (c) $\frac{3}{5}$ (d) zero

(5) Which of the following may be equal a probability of an event ?

(a) $\frac{-3}{4}$ (b) 1.7 (c) $\frac{7}{5}$ (d) 60 %

2 Complete each of the following :

(1) If $x\,y^{-1} = \frac{1}{3}$, then $\frac{x}{y} =$ ....

(2) If $5^x = 3$, then $5^{x+1} =$ ....

(3) If the probability that a student succeeds in an exam is 0.8, then the probability of his failure is ....

(4) If $x \in \mathbb{R}$, then the S.S. of equation : $x^2 + 49 = 0$ is ....

(5) The age of a man now is x years, then his age after 7 years is .... years.

3 [a] Factorize each of the following :

(1) $x\,y + 5\,y + 3\,x + 15$ (2) $x^4 + 4\,y^4$

[b] If a real number is added to its square the result will be 12, find this number.

4 [a] Find in $\mathbb{R}$ the S.S. of the equation : $x^3 - 25\,x = 0$

[b] Simplify to the simplest form : $\frac{3^x \times 6^x}{18^x}$

5 [a] A box contains 5 blue balls , 7 red balls and 8 green balls.

A ball is drawn randomly from the box.

Find the probability of getting :

(1) Red ball. (2) Non-blue ball. (3) White ball.

[b] If $3^{x-4} = 243$

Find the value of : x

Additional question

[a] **Choose the correct answer :**

(1) If $\ell + m = 9$, $m - \ell = -6$, then $\ell^2 - m^2 =$ ....

(a) 54 (b) 14 (c) – 54 (d) – 14

(2) If $x^2 - 2xy + y^2 = 36$, then $x - y =$ ....

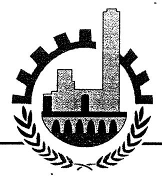
(a) 18 (b) – 6 (c) 6 (d) ± 6

[b] **Factorize completely :**

(1) $2x^3 + 16$ (2) $7x^4 + 23x^2y - 30y^2$

7 El-Kalyoubia Governorate

Directorat of Education
Mathematics Inspection



Answer the following questions :

1 **Choose the correct answer :**

(1) If $x^3 \times y^{-3} = 8$, then $\frac{x}{y} =$ ....

(a) $\frac{8}{3}$ (b) 2 (c) $\frac{1}{2}$ (d) 512

(2) The S.S. of the equation : $x(x-2) = 0$ in $\mathbb{R}$ is ....

(a) $\{0\}$ (b) $\{2\}$ (c) $\{0 , 2\}$ (d) $\{0 , -2\}$

(3) If $\left(\frac{5}{3}\right)^x = \frac{27}{125}$, then $x =$ ....

(a) – 5 (b) – 3 (c) 5 (d) 3

(4) $4^3 + 4^3 + 4^3 + 4^3 =$ ....

(a) 4^4 (b) 4^{12} (c) 16^3 (d) 16^{12}

(5) $2^2 \times 5^3 =$ ....

(a) $\frac{1}{2} \times 10^3$ (b) 10^3 (c) 10^5 (d) 10^6

2 **Complete each of the following :**

(1) The S.S. of the equation : $x^2 - 3 = 0$ in $\mathbb{R}$ is ....

(2) The S.S. of the equation : $(x^2 + 4)(x^3 + 1) = 0$ in $\mathbb{R}$ is ....

(3) $(-5)^{-3} =$ ....

(4) If $2^x = 3$, then $8^x =$ ....

(5) Letters of the word (Elkliobia) are written in cards. If a card is drawn , then the probability that chosen card carries the latter "i" = ...

---

3 **[a] Factorize the following expression :** (1) $x^2 - 5x$ (2) $ax - 7a + 3x - 21$

[b] If $a = \sqrt{10}$, $b = 1$ **Find the numerical value of :** $a^4 + b^{10}$

---

4 **[a] Find the S.S. of the equation :** $(2x - 3)(x + 1) = 0$, $x \in \mathbb{R}$

[b] Simplify : $\frac{(\sqrt{2})^5 \times 3^6}{3^4 \times (\sqrt{2})^3}$ to the simplest form.

---

5 **[a]** The length of a rectangle exceeds its width by 1 cm. , if its perimeter = 14 cm. Calculate its area.

[b] A regular die is drawn once. Find the probability of getting :

(1) A number divisible by 8 . (2) A prime number less than 4

Additional question

[a] Complete each of the following :

(1) If $x^2 - k + 10 = (x - 3)(x + 3)$, then k = ...

(2) If $x = 3$, $y = 8$, then $x^2 - 2xy + y^2 =$ ....

[b] Use factorization to get the value of : $(80)^2 + 40 \times 80 + 400$

8 El-Sharkia Governorate

Directorate of Education
Dept. of Governmental L. Shools



Answer the following questions :

1 **Choose the correct answer :**

(1) If $(x - 2)^0 = 1$, then $x \in$ ....

(a) $\{2\}$ (b) $\mathbb{R}$ (c) $\mathbb{R} - \{2\}$ (d) $\mathbb{R} - \{-2\}$

(2) If $5^{x} = 4$, then $5^{x-1} =$ ....

(a) 0.8 (b) 1.25 (c) 0.125 (d) 0.08

(3) The S.S. of the equation : $x^2 + 1 = 0$ in $\mathbb{R}$ is ....

(a) $\{-1\}$ (b) $\{1\}$ (c) $\{1 , -1\}$ (d) $\varnothing$

(4) The probability of impossible event is ....

(a) $\varnothing$ (b) -1 (c) zero (d) 1

(5) The value of $\left(\sqrt[\cdots]{x}\right)^{16} = x$ ....

(a) 16 (b) 8 (c) 4 (d) 32

2 Complete :

(1) $5^{x+2} =$ .... $\times 25$

(2) If $x^3 y^{-3} = 8$ then $\frac{y}{x} =$ ....

(3) If a die is thrown once , then the probability of appearance 5 is ....

(4) $a^{-7} + 1 = a^{-7}$ (.............. + ...)

(5) $3^{x} \times 3^{x} \times 3^{x} = (27)^{\cdots\cdots}$

3 [a] Factorize each of the following :

(1) $a^2 + a b + a + b$ (2) $x^4 + 4 y^4$

[b] **Find in $\mathbb{R}$ the S.S. of the equation :** $(2x + 1)(x - 3) = 0$

4 [a] Find the value of x if : $3^{x-2} = 27$

[b] **Find in the simplest form :** $\dfrac{4^{x+1} \times 3^{2x-3}}{6^{2x}}$

5 [a] If $2^{x-3} = 1$ **Find the value of :** x^2

[b] If a card is selected randomly of 30 cards in a box numbered from 1 to 30

Find the probability of getting :

(1) A card carries a number divisible by 5

(2) A card carries a prime number less than 20

(3) A card carries an even number.

Additional question

[a] Choose the correct answer :

(1) If $(x + 1)^2$ is a factor of the expression $(x^2 - 1)^2$, then the other factor is ....

(a) $x - 1$ (b) $x^2 - 1$ (c) $x^2 + 1$ (d) $(x - 1)^2$

(2) If $x = 7$, $y = 3$, then $x^2 + 2xy + y^2 =$ ....

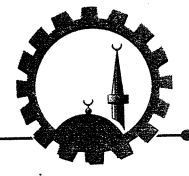
(a) 10 (b) 4 (c) 100 (d) 16

[b] Factorize each of the following :

(1) $3x^2 + 10x + 8$ (2) $\frac{1}{3}x^3 - 9$

9 El-Gharbia Governorate

Official Language Schools
The Central Maths Supervision



Answer the following questions :

1 Choose the correct answer :

(1) If a die is thrown once , then the probability of appearance odd prime number is ....

(a) 0 (b) $\frac{1}{6}$ (c) $\frac{1}{3}$ (d) $\frac{1}{2}$

(2) If $7^x = 49$, then $x =$ ....

(a) 0 (b) -2 (c) -7 (d) 2

(3) Which of the following may be equal the probability of an event ?

(a) -0.73 (b) 1.23 (c) 79% (d) $\frac{4}{3}$

(4) $3^{10} + 3^{10} + 3^{10} =$ ....

(a) 3^{30} (b) 3^{1000} (c) 3^{11} (d) 3^{12}

(5) One sixth of the number : $2^{12} \times 3^{12}$ is ....

(a) 6^2 (b) 6^4 (c) 6^{11} (d) 6^{23}

2 Complete :

(1) 1 , 1 , 2 , 3 , 5 , 8 , ... , ... (in the same pattern)

(2) If $3^x \times 2^{-x} = 1.5$, then $x =$ ....

(3) The S.S. of the equation : $(x-1)^2=0$ in $\mathbb{R}$ is ....

(4) If $6^x = 11$, then $6^{x+1}=$ ....

(5) The probability of the impossible event = ...

3 [a] **Factorize each of the following :**

(1) y^3+y^2+9y+9 (2) $4x^4+y^4$

[b] **Find in the simplest form :** $\left(\sqrt{3}+2\right)^{11}\left(\sqrt{3}-2\right)^{11}$

4 [a] If $\frac{8^x \times 9^x}{18^x}=64$ **Find the value of :** $(4)^{-x}$

[b] What is the positive real number if we add its square to three times it the result will be 28 ?

5 [a] The set $\{2 , 3 , 5\}$ is used to write a number which consists of two different digits

(1) Write the sample space.

(2) **Find the probability of the following events :**

First : The units digit is an even number.

Second : The sum of the two digits greater than 5

[b] **Find the value of x if :** $7^{x-2}=1$, where $x \in \mathbb{R}$

Additional question

[a] **Complete the following :**

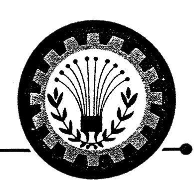
(1) If $x-y=3$, $x-2y=7$, then $x^2-3xy+2y^2=$ ....

(2) $\ell^2-m^2=\ell+m$, then $\ell-m=$ ....

[b] **Use factorization to get the value of :** $(73)^2-(27)^2$

10 El-Dakahlia Governorate

Maths Supervision



Answer the following questions :

1 **Complete each of the following :**

(1) If $x^3 y^{-3}=8$, then $\frac{y}{x}=$ ....

(2) If $x^2+y^2=26$, $x+y=6$, then $xy=$ ....

(3) $3^{x-1} + 3^{x-1} + 3^{x-1} = 3$ ....

(4) If $2^{x} = \sqrt{3}$, then $16^{x} =$ ....

(5) If $(a + 2b) = 5\ (a - 2b) = 10$, then $a^2 - 4b^2 =$ ....

2 Choose the correct answer :

(1) If $3^{x} = 5$, then $3^{x+2} =$ ....

(a) 10 (b) 15 (c) 45 (d) $\frac{5}{4}$

(2) The S.S. of the equation : $x^2 + 9 = 0$ in $\mathbb{R}$ is ....

(a) $\{0\}$ (b) $\{3\}$ (c) $\{3 , -3\}$ (d) $\varnothing$

(3) If $x + \frac{1}{x} = 3$, then $x^2 + \frac{1}{x^2} =$ ....

(a) 9 (b) 11 (c) 7 (d) 1

(4) If the probability that a student succeeds in an exam is 0.8 , then the probability of his failure is ....

(a) $\frac{1}{5}$ (b) $\frac{1}{2}$ (c) $\frac{1}{4}$ (d) $\frac{2}{3}$

(5) If $x + 2y = 7$, $a - b = 3$, then $b\,(x + 2y) - a\,(x + 2y) =$ ....

(a) 10 (b) 21 (c) -21 (d) -10

3 Factorize :

(1) $4x^4 + 25y^4 - 29x^2y^2$ (2) $x^3 + 2x^2 - 4x - 8$ (3) $x^4 + 64$

4 [a] **Simplify :** $\frac{(9)^{x-1} \times (4)^{x+2}}{(6)^{2x}}$

[b] **Find in $\mathbb{R}$ the S.S. of the equation :** $x - \frac{3}{x} = 2$

5 [a] If $\left(\frac{3}{5}\right)^{x-2} = \frac{125}{27}$ **Find the value of :** x

[b] A box contains 24 identical cards numbered from 1 to 24 , a ball chosen randomly

Find the probability that :

(1) The chosen card carries number divisible by 6

(2) The chosen card carries a prime number.

11 Port Said Governorate

North Administration
Gov. School Directory



Answer the following questions :

1 Complete each of the following :

(1) If $x(x-2)=0$, then $x=0$ or $x=$ ....

(2) The solution set of : $x^2+4=0$ in $\mathbb{N}$ is ....

(3) $a(x+y)+b(x+y)=(x+y)=$ (.............. + ...)

(4) The letters of the word (Egypt) are written in cards , if a card is drawn at random , then the probability that chosen card carries the letter "E" is ....

(5) $\left(\sqrt{3}+\sqrt{2}\right)^9\left(\sqrt{3}-\sqrt{2}\right)^9=$ ....

2 Choose the correct answer :

(1) $3^3+3^3+3^3=$ ....

(a) 3^3 (b) 3^4 (c) 3^9 (d) 4^{27}

(2) The probability of impossible event = ...

(a) 1 (b) 2 (c) 0 (d) $\frac{1}{2}$

(3) $\left(\frac{\sqrt{5}}{3}\right)^{-2}=$ ....

(a) $\frac{9}{5}$ (b) $\frac{-9}{5}$ (c) $\frac{-5}{9}$ (d) $\frac{5}{9}$

(4) If $(x-5)^{zero}=1$, then $x\in$ ....

(a) $\mathbb{R}$ (b) $\mathbb{R}-\{5\}$ (c) $\mathbb{R}-\{-5\}$ (d) $\{5\}$

(5) If $5x=20$, then $x=$ ....

(a) 4 (b) 8 (c) 15 (d) 20

3 [a] **Factorize the following expression :** $ax+bx+ay+by$

[b] **Find in $\mathbb{R}$ the S.S. of the equation :** $x^2+5x+6=0$

4 [a] If $3^{x-1}=9$, **then find the value of :** x

[b] **Simplify :** $\frac{4^x\times 2^{x+1}}{8^x}$

5 A bag contains 5 red balls , 3 green balls and 2 yellow balls. One ball is chosen at random **, find the probability that the chosen ball is :**

(1) Yellow. (2) Green. (3) Not red.

Additional question

[a] **Choose the correct answer :**

(1) If $x^2 + a = (x + 3)(x - 3)$, then a = ...

(a) 6 (b) 9 (c) -9 (d) -6

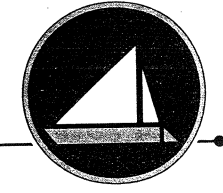
(2) The value of m which makes the expression : $m x^2 + 14 x + 1$ a perfect square is ....

(a) 7 (b) 14 (c) 49 (d) 16

[b] **Factorize each of the following :** (1) $\frac{1}{4} a^2 - 2a + 4$ (2) $2 - 2m^3$

12 Damietta Governorate

Damietta Inspection of Mathematics
Experimental at Language Schools



Answer the following questions :

1 **Choose the correct answer :**

(1) The probability of an impossible event = ...

(a) 2 (b) -1 (c) 1 (d) zero

(2) $x^4 + 4 = (x^2 + 2)^2$ ....

(a) $+ 2x^2$ (b) $- 2x^2$ (c) $- 4x^2$ (d) $+ 4x^2$

(3) A bird can travel 8 km. in 15 minutes , at this rate the bird can travel .... km. in 1 hour.

(a) 32 (b) 16 (c) 120 (d) 60

(4) If $(x - 5)^0 = 1$, then $x \in$ ....

(a) $\mathbb{R}$ (b) $\mathbb{R} - \{5\}$ (c) $\mathbb{R} - \{-5\}$ (d) 5

(5) The solution set of the equation : $x^2 + 25 = 0$ in $\mathbb{R}$ is ....

(a) $\{5\}$ (b) $\{-5\}$ (c) $\{5 , -5\}$ (d) $\varnothing$

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2 **Complete :**

(1) 25% of L.E. 320 is L.E. ....

(2) If a die is thrown once , then the probability of appearance of an even prime number ....

(3) If $5^{x-2} = 1$, then $x = $ ....

(4) $\left(\frac{\sqrt{2}}{\sqrt{3}}\right)^{-4} = \left(\frac{\cdots\cdots\cdots}{\cdots\cdots\cdots}\right)^2$

(5) If $4a + 4b = 32$, then $3a + 3b = $ ....

3 [a] **Factorize each of the following :**

(1) $x^4 + 4y^4$

(2) $3ax - a + 6bx - 2b$

[b] **Simplify to the simplest form :** $\frac{9^x \times 4^x}{6^{2x}}$

4 [a] If $3^{x-1} = \frac{1}{27}$ **Find the value of :** x

[b] **Simplify :** $\frac{(\sqrt{5})^{x+2} \times (\sqrt{5})^{3x}}{(\sqrt{5})^{2x}}$ **, then find the value when $x = 1$**

5 [a] **Find the solution set of the equation in $\mathbb{R}$:** $x^2 - x = 12$

[b] A box contains 7 red balls , 5 blue balls and 3 green balls , one is chosen randomly.

Find the probability of the chosen ball is :

(1) Green.

(2) Yellow.

(3) Not blue.

Additional question

[a] **Complete :**

(1) If $x + y = 5$, $x^2 - xy + y^2 = 7$, then $x^3 + y^3 = $ ....

(2) $(17)^2 + 2 \times 17 \times 3 + 3^2 = $ ....

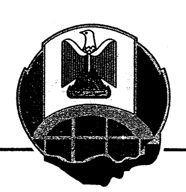
[b] **Factorize each of the following perfectly :**

(1) $(x + 4)^2 - 36$

(2) $2y^4 + 3y^2 - 5$

13 El-Fayoum Governorate

Directorate of Education
Supervision of Mathematics



Answer the following questions :

1 **Choose the correct answer :**

(1) $(3)^{-2} = $ ....

(a) -9 (b) $-\frac{1}{9}$ (c) $\frac{1}{9}$ (d) 9

(2) If x is an even natural number , then the next odd natural number directly is ....

(a) $x + 1$ (b) $x + 2$ (c) $2x + 1$ (d) $2x$

(3) The S.S. of : $x(x-2)=0$ in $\mathbb{R}$ is ....

(a) $\{2\}$ (b) $\{0,-2\}$ (c) $\{0,2\}$ (d) $\{0\}$

(4) If $\frac{x-5}{x-7} \in \mathbb{Q}$, then $x \neq$ ....

(a) 5 (b) -5 (c) 7 (d) -7

(5) $5^2+5^2=$ ....

(a) 10^2 (b) 10^4 (c) 5^4 (d) 50

2 **Complete each of the following :**

(1) $(5a)^0=$ .... where $a \neq 0$

(2) The probability of the impossible event = ...

(3) If $3^{n-2}=81$, then n = ...

(4) $8+2\times 6\div 4=$ ....

(5) For every event A , we find that : $0 \le P(A) \le$ ....

3 [a] **Factorize each of the following completely :** (1) $xy+5y+7x+35$ (2) x^4+4

[b] **Find in $\mathbb{R}$ the S.S. of the following equation :** $x^2-6x=0$

4 [a] If $a=\sqrt{2}$, $b=\sqrt{3}$

find (by steps) the numerical value of : $\frac{b^2-a^4}{b^2+a^2}$

[b] A card is selected randomly from a set of similar cards numbered from 1 to 10

find the probability of getting a card that carries :

(1) An even number.

(2) A number divisible by 7

(3) A number less than or equal to 10

5 [a] **Find in $\mathbb{R}$ the S.S. of the following equation :** $2^{x^2-9}=1$

[b] **Simplify to the simplest form :** $\frac{9^x \times 3^{x+2}}{(27)^x}$

Additional question

[a] **Choose the correct answer :**

(1) The expression : x^2-3x+c can be factorized when c = ...

(a) 1 (b) 2 (c) 4 (d) 6

(2) If the expression : $c+3x+\frac{1}{4}$ is a perfect square , then c = ...

(a) x^2 (b) $\frac{9}{4}x^2$ (c) $9x^2$ (d) $4x^2$

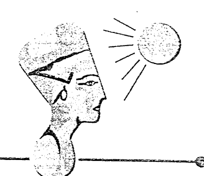
[b] **Factorize each of the following :**

(1) $x^2-4x-3(x-2)$ (2) $l^3-\frac{1}{125}$



14 El-Menia Governorate

Governmental Language School
General Supervisor of Mathematics



Answer the following questions :

1 Complete :

(1) $\left(\frac{1}{4}\right)^{-1} = \text{..............}$

(2) $\left(\sqrt{2}\right)^2 \times \left(\sqrt{2}\right)^4 = \text{..............}$

(3) If $2^{2x-1} = 32$, then $x = \text{..............}$

(4) The probability of the impossible event = ...

(5) The S.S. of : $x(x-1) = 0$ in $\mathbb{R}$ is ....

2 Choose the correct answer :

(1) Sixth the number : $2^{12} \times 3^{12}$ is ....

(a) 6^2 (b) 6^4 (c) 6^{11} (d) 6^{23}

(2) If $x = \frac{\sqrt{9}}{\sqrt{3}}$, then $x^{-1} = \text{..............}$

(a) $\frac{\sqrt{3}}{3}$ (b) $\frac{\sqrt{3}}{\sqrt{2}}$ (c) $\sqrt{3}$ (d) 2

(3) If 2 is a solution of : $x^2 - 5x + l = 0$, then $l = \text{..............}$

(a) -3 (b) -6 (c) 3 (d) 6

(4) $5^{x-2} = 1$, then $x = \text{..............}$

(a) 0 (b) 1 (c) 2 (d) 3

(5) $4^3 + 4^3 + 4^3 + 4^3 = \text{..............}$

(a) 4^3 (b) 4^4 (c) 4^{12} (d) 4^{81}

3 Factorize : (1) $xy + 5y + 7x + 35$ (2) $x^4 + 4y^4$

4 [a] Find in $\mathbb{R}$ the S.S. of : $x^2 + 16 = 8x$

[b] Simplify : $\frac{4^{x+1} \times 9^{2+x}}{6^{2x}}$

5 [a] If $3^{x} = 27$, $4^{x+y} = 1$ **Find the value of :** x and y

[b] A bag contains 15 balls numbered from 1 to 15 , one ball is chosen randomly.

Find : (1) The probability that the number on the chosen ball is divisible by 3

(2) The probability that the number on the chosen ball is even number.

(3) The probability that the number on the chosen ball is prime number.

Additional question

[a] Complete :

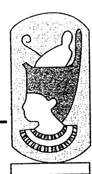
(1) $5x^2 - 3xy - \dots\dots = (x - y)(\dots\dots + \dots\dots)$

(2) $\dots\dots - 64x^2 = (4 - \dots\dots)(4 + \dots\dots)$

[b] The area of a square is $(9x^2 + 30x + m)$ cm². Find the value of m (given that the side length of the square is a rational number) , then find its perimeter when $x = 2$

15 Souhag Governorate

General Mathematics Supervision



Answer the following questions :

1 Choose the correct answer :

(1) $(x + 3)^2 = \dots\dots$

(a) $x^2 + 9$ (b) $x^2 - 9$ (c) $x^2 + 6x + 9$ (d) $x^2 - 6x + 9$

(2) If $\left(\frac{5}{3}\right)^{x} = \frac{27}{125}$, then $x = \dots\dots$

(a) -5 (b) -3 (c) 2 (d) 5

(3) In a mixed school there are 320 students , if the probability that the ideal student is a boy equals 0.6 , then the number of girls of the school equals .... girls.

(a) 256 (b) 192 (c) 128 (d) 196

(4) If $a + b = 5$, $a - b = 4$, then $b^2 - a^2 = \dots\dots$

(a) -20 (b) -1 (c) 9 (d) 20

(5) $(x + 1)^2 = 1$, then $x \in \dots\dots$

(a) $\{0 , 2\}$ (b) $\{0 , -2\}$ (c) $\{0\}$ (d) $\varnothing$

2 Complete the following :

(1) If the probability that a student succeeds in an exam is 0.85 , then the probability of his failure equals ....

(2) The greater number of $(-2)^{24}$ and $(-2)^{25}$ is ....

(3) If $2^{x} = 5$, then $2^{x+1} =$ ....

(4) $x(a+b) - y(a+b) = (a+b)$ ....

(5) If four times a number is 48 , then one third of this number is ....

3 [a] Factorize each of the following completely :

(1) $a x - 4a + 3x - 12$

(2) $a^4 + 4b^4$

[b] Find in ℝ the S.S. of the equation : $2x^3 = 18x$

4 [a] Simplify : $\frac{4^n \times 6^{2n}}{2^{4n} \times 3^{2n}}$

[b] If $(\sqrt{3})^{n+2} = 9$

Find the value of : n

5 [a] Find the positive real number if we add its square to its three times the result will be 28

[b] One card is selected randomly from 8 cards numbered from 1 to 8

, find the probability of the following events :

(1) Getting a number divisible by 3

(2) Getting a number greater than or equal to 6

(3) Getting a prime number.

Additional question

[a] Choose the correct answer :

(1) If $b - a = 6$, then $a^2 - 2ab + b^2 =$ ....

(a) -36 (b) 36 (c) ± 36 (d) -12

(2) If $4x^2 - y^2 = 32$, $2x + y = 8$, then $4x - 2y =$ ....

(a) 4 (b) 6 (c) 16 (d) 8

[b] Factorize each of the following :

(1) $4x(3x + 7y) - 5y^2$

(2) $\frac{1}{8}a^3 - 8b^3$